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## **SIPADAN ISLAND, MALAYSIA**

**Progress Comes to Paradise**

## **SPECIAL FEATURE**

## **A Sea of Wastes**

**Is It Time to Reclaim Our Oceans?**

*Also...*

*The Caves of Point Lobos*


*Mexico's Islas Los Coronados*

### **THIS ISSUE PD REVIEWS:**

- Brotherz Equipment Hangers
- I.S.T. Dual-Window Mask







A close-up, high-contrast photograph of a diver's face in profile, wearing a blue wetsuit and using a Sherwood Maximus regulator. The diver is underwater, with a blue background. The regulator is black with a blue logo. The image is split vertically, with the left side showing the diver and the right side containing text.

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# PACIFIC DIVER

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PACIFIC DIVER welcomes unsolicited materials, both written and photographic. All submissions and queries should be accompanied by a stamped, self-addressed envelope to ensure their return. Mail all editorial correspondence and slides to Editor, PACIFIC DIVER Magazine, P.O. Box 6218, Huntington Beach, CA 92615.

Advertising Offices:  
3197-E Airport Loop Dr., Costa Mesa, CA 92626; (714) 546-4370; FAX (714) 662-3486.

PACIFIC DIVER Magazine is published by Western Outdoors Publications. Other affiliated publications are *Western Outdoor News*® and *WESTERN OUTDOORS*® magazine.

Subscriber service, change of address, P.O. Box 2027, Newport Beach, CA 92659-1027, telephone (714) 361-9765.

PACIFIC DIVER is published bi-monthly by Western Outdoors Publications, 3197-E Airport Loop Drive, Costa Mesa, CA 92626. Second class postage paid at Costa Mesa, CA, and additional mailing offices.

POSTMASTER: Send address changes to PACIFIC DIVER, 3197-E Airport Loop Drive, Costa Mesa, CA 92626.

SUBSCRIPTION RATES: Single copy \$3.00 published bi-monthly, 6 issues (one year) \$14.95, 12 issues (two years) \$24.95 and 18 issues (three years) \$34.95. Subscription outside of U.S. add \$8.00 postage. Paid orders in U.S. funds only.

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# DIVER

VOLUME III

NUMBER 4

JANUARY/FEBRUARY 1991

## FEATURES

### PACIFIC DIVING: A PICTORIAL

12

Readers grab their cameras in the quest for the shot that says "Pacific Diving."

### A LAND CALLED HANAIEI

19

Along the tropical north shore of the Hawaiian island of Kauai you'll find uncrowded adventure diving in tranquil surroundings.

By John Brumm

### THE CAVES OF POINT LOBOS

28

Caverns and tunnels, leopard sharks and playful harbor seals. There's more to America's first underwater park than first meets the eye.

By Bruce Watkins

### WORLD TRAVEL: SIPADAN ISLAND, MALAYSIA

32

Progress has arrived in this little piece of paradise. But that's not such bad news to this writer, who finds that he can indeed go home again.

By Eric Hanauer

### A SEA OF WASTES

36

Will the 1990s be the decade when we reclaim our oceans, or will we allow pollution to overpower us? A special feature on the state of the marine environment.

By Dr. Tom Garrison

### WINTER WONDERLAND

43

Would you believe Barkley Sound, British Columbia, in February? Yeah it's cold, but as it turns out, the extraordinary diving is worth the goose bumps.

By Darren & Stacey Douglass

### BORDER TOWN DIVING

51

Some of the best boat diving out of San Diego Harbor can be found at Mexico's "Desert Isles," better known as the Coronados Islands.

By Kenneth Corben



## ON THE COVER

Linda Bail of Bubbles Below feeds the locals at a reef on Kauai's north shore. Photo by Karen Schulman.

## COLUMNS

### OCEANS

23

Which direction are our temperatures heading? The debate rages on, but only geologic time will tell.

By Rick Baker

### LOGBOOK: Dive Stores from Our Readers

26

It was a "dry" dive in Catalina's Hyperbaric Chamber for this Irvine, California, diver.

By Tiffani Woodworth

### INSTRUCTOR'S CORNER

47

Beginning divers can lighten the loads on their weightbelts by increasing underwater skills.

By Darren Douglass

### S.O.B.

49

This Channel Islands dive odyssey was definitely not a pretty sight.

By John Francis

## DEPARTMENTS

### EDITORIAL

6

### LETTERS

7

### DIVERS UPDATE

15

### READER SERVICE

53

### DIVE BOAT SCHEDULES

56

### DIVE TRAVEL NEWS

58

### PRODUCT REVIEWS

59

### Brotherz Hangers

### I. S. T. Dual-Window Mask

### St. Claire Gage-Gard

### Truwest Parka

### ADVERTISER'S INDEX

60

### FOCUS ON: The Wolf Eel

62



page 19





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## Big News for the New Year

Big things are in the making for 1991.

To start, I'd like to welcome all of our new subscribers who have joined us over the past few months. It's great to have you on board as part of the PACIFIC DIVER team. You can plan on receiving six dynamite issues this year which I hope will keep you tuned in and turned on to sport diving.

On the environmental front, we won't be seeing as many gill nets drifting along Southern California's coastlines in 1991, and in a couple of years we won't see them at all, thanks to the passage of Proposition 132 last November 6th (for the story turn to page 15).

PACIFIC DIVER's first "Dive Boat Day" last November 25th was so much fun that we've decided to sponsor these special boat diving events every month throughout 1991. Starting on January 12th and continuing for the rest of the year, you'll be seeing the PACIFIC DIVER banner on selected dive boats from San Diego to Monterey. If you're interested in joining in the fun, call us at (714) 361-9765.

Since "Dive Boat Day" has been such a success, we've decided to take these diving parties across the border. For our first "road trip" we plan to slide on down to Cabo San Lucas, where the diving is good, the food is great and relaxation is the only thing you have to take serious. As soon as we have the details, we'll pass them along to you.

This year we're also going to be expanding our editorial coverage of foreign dive destinations. In addition to our ongoing articles on local, Hawaiian, Canadian, western Mexico and South Pacific diving, this year join PACIFIC DIVER on occasional forays to popular dive destinations located outside the Pacific Rim.

Like Cozumel, for example. The fact that it's inexpensive to vacation there and the diving is great has made this Mexican island a favorite destination among Pacific divers. However, Cozumel is located in the Caribbean, and since we're "PACIFIC" DIVER, up until now we've been hesitant to include Cozumel in our travel itinerary. But that's changed. Enough of you readers have asked us to take a look at dive destinations in the Caribbean that we figured, hell, why not? So in our new World Travel section, future issues will have articles on Cozumel, Roatan, Dominica and other Caribbean hotspots as well as Pacific destinations.

A couple of our ongoing columns are going to be getting a little more worldly as well. Rick Baker's "The Pacific" column is

now called "Oceans." In this new format Rick will continue to share his fascination with marine geology with us, but now he'll be expanding his explorations to include all oceans of the world.

So too with Dr. Tom Garrison's Sea Life column. But this issue Dr. Tom has taken a break from his column to write a very special feature entitled "A Sea of Wastes." Our "Main Marine Biologist" has delivered a poignant report on the current condition of our marine environment, and, believe me, it's enough to set your teeth to grinding.

But while these truths can't help but make you angry, Dr. Tom still believes there's hope. And that hope lies not with government, nor with industry, but like the song says, with that "Man (or Woman) in the Mirror."

Education. Awareness. Personal initiative. Our three strongest weapons in the war against global pollution. This was recently driven home to me right here at the magazine office. For years the employees of PACIFIC DIVER's parent company have been drinking their morning coffee out of styrofoam cups, the kind you see in coffee rooms everywhere. Since we were accustomed to having them around, none of us gave these cups much thought, even though styrofoam is playing a major role in our pollution problems.

After reading the galley proofs of "A Sea of Wastes" (on page 36 of this issue), one of PACIFIC DIVER's staffers looked at the coffee cup in his hand and made the connection. He immediately went in to see Bob Twilegar, PACIFIC DIVER's publisher.

Well, Bob had never given much thought to the styrofoam cups either, but once the topic was brought up, the problem clicked in his head too. He picked up the phone and canceled all future orders of styrofoam products for office use.

I'm sure there are some out there who might say that, in the general scheme of things, this incident was pretty small change. And I guess they'd be right. But let's not forget that 100 pennies make a dollar. And while the action one individual takes to modify a company's buying habits might be inconsequential, get 100 individuals changing the buying habits of 100 companies and suddenly you've got yourself an event.

Every great feat begins with the taking of that first step. And first steps are always taken by individuals. There's no doubt about it; when individuals band together and take action in common cause, we can truly change the world.

John Brumm  
Editor

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 "If you want to learn and have a special time, take the Church Course." (C. Yablow, NY).  
 "The course is great! I learned a lot." (T. Adam, Canada).

### UNDERCURRENT, Vol 15, No. 10:

"Master photographer Jim Church teaches photography courses aboard the *Aggressors* throughout the year." (pg. 6).  
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 April 28-May 5, *Truk Aggressor*.  
 July 6-13, *Bay Islands Aggressor*.  
 Aug 25-Sep 1, *Truk Aggressor*.  
 Sep 14-21, *Cayman Aggressor III*.  
 Nov 16-23, *Cayman Aggressor III*.

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## LETTERS

### Advanced Divers Tired of "Babysitting" Articles/Dive Trips

I am responding to a letter by Jake Vincente regarding Michael Dewing and his various letters to PACIFIC DIVER (Letters, July/August 1990). I have had the honor of knowing Mike Dewing for many years. I know him to be a skilled and cautious diver and have nothing but admiration for his teaching methods and emphasis on real diving skills.

Therefore, I disagree with Mr. Vincente's interpretation of Mike as a "reckless" or "macho" diver. Having seen him in action, I can verify that Mike Dewing is one of the safest and most advanced divers that I know. And I must agree with Mike that there is a sad lack of articles/dive trips aimed at the experienced diver. Most dive publications are geared to the novice diver. Obviously, these articles have merit, but it is refreshing to find articles that discuss some of the topics concerning more advanced divers.

Additionally, I personally have been on many dive tours where the dive master or resort was completely set up to handle only novice divers. I share Mike's frustration with this "babysitting" approach. We don't pay money to take our groups on dive vacations to see the same reefs that thousands of other divers have seen and dived on. Fortunately, this seems to be changing with some of the special trips geared toward advanced/instructor level divers.

I think that PACIFIC DIVER has done an exemplary and well-balanced job in presenting all facets of diving on the West Coast. Keep those advanced articles coming!

Jennifer King, President  
L.A. County Underwater  
Instructor's Assn.  
San Pedro, CA

### Pacific Northwest Diver Defends O.S. Systems Drysuits

I'd like to start this by saying that PACIFIC DIVER is one of the best and most attractive magazines that I have seen in dive stores. I especially like the fact that you do articles on the Pacific Northwest.

It bothers me, though, to see inaccuracies in your articles, especially when the author won't give his or her name.

In your November/December 1990 issue you had an article on drysuits that read like a two-page advertisement for the CD200. It stated that fabric suits would only last three to four years. WRONG! I've had an O.S. Systems suit for over five years

After reading your product review section of the November/December 1990 issue, several other Sea Quest personnel, myself included, were somewhat distressed at the review of our new Explorer BC. Not that you had done an injustice to our product, but because we obviously had a problem on our hands. The Multiset cummerbund "Quick Clips," which were the subject problem in your article, are a relatively new feature for us. In fact, the Explorer was originally introduced with a zipper adjustment system which was replaced by the Quick Clips because the clips offered an extra adjustment and were less prone to separation.

In addition to your observation, we had heard from a few of our retailers that they were experiencing a similar problem. At first it seemed as though users were not tucking the band underneath the webbing strap which keeps the system locked together, an obvious possibility because this point had inadvertently been left out of the instructions.

Two days after reading your review, our engineering department came up with an easy-to-use locking device that attaches to the bottom of the wire clip after it is installed in the adjustment channel. This absolutely prevents the clip from separating. Furthermore, this "clip lock" can be retrofitted to all existing products in the field that use the suspect system, an offer we will make to our entire customer base at no charge.

Enclosed are two handmade prototypes for you to try out. Production pieces

and it shows no sign of deterioration. One of my dive buddies has over 100 dives on his O.S. Systems suit with no signs of damage or aging. I know a diver that has over 500 dives on his "fabric suit" and it looks in very good condition but most importantly, it keeps him dry.

Divers look to PACIFIC DIVER for fair and evenhanded evaluations of diving equipment. It would have been more fair if this article had been written about the one suit it favored and other articles were written about the remaining suit types.

It would also help if you could list the authors' names on all articles. Besides giving credit for jobs well done, it gives readers someone to respond to. Who knows? This article could have been written by a dive shop employee!

Thanks again for a good magazine.

Ray Contreras  
Port Orchard, WA

### When it Comes to Fixing a Problem, Sea Quest Doesn't Mess Around!

should be available by December 15. I've also enclosed a very rough sketch of how to install the clips. We will be providing finished artwork to all those performing the retrofit as well as to new production Explorer BCs and our new Discovery BC which utilizes the same system. We would appreciate it if you could let your readers know of this new system and that there is a simple solution available to correct any problems experienced in the field.

The Explorer BC was an absolute hit for Sea Quest in 1990. Occasionally, simple changes can bring unwanted problems. The entire staff of Sea Quest thanks you and your magazine for bringing this to our attention.

Donald Rockwell,  
Executive Vice-President  
Sea Quest, Inc.  
Carlsbad, CA

*Problems can arise in any product. We feel Sea Quest's straightforward response to the glitch in the Explorer BC's Multiset cummerbund demonstrates the company's commitment to its product line. And more importantly, Sea Quest's willingness to provide retrofit kits at no charge demonstrates the company's commitment to its customers. Needless to say, we here at PD are impressed.*

*Anybody out there having trouble with Multiset cummerbunds? Head for your local Sea Quest dealer and he'll fix you right up with a retrofit kit.*

*Oh yeah. We took the prototype locking devices Sea Quest sent us and tried them out on an Explorer BC, and sure enough, the clip lock worked fine. Problem solved. — Ed.*

### Beware of Shoddy Dive Shops While on Vacation

I have been a PACIFIC DIVER subscriber for two years now and I dive the coast of California frequently. I've enjoyed the letters written to the magazine and would like to include one of my own.

I don't want this to sound like another whiner story, but I feel my experience needs to be shared with other divers. One Thursday afternoon during a recent dive trip to Maui, Hawaii, I went into Captain Nemo's dive shop to book a dive trip out to Molokini Crater on the following Tuesday. I booked the trip and paid for it with my VISA card. My buddy paid cash for a snorkel cruise scheduled on the same day.

To be able to do this dive conveniently, we rented a car for our wives so they wouldn't have to get up early and drive us into Lahaina to catch the boat. What's more, on Monday morning, the day



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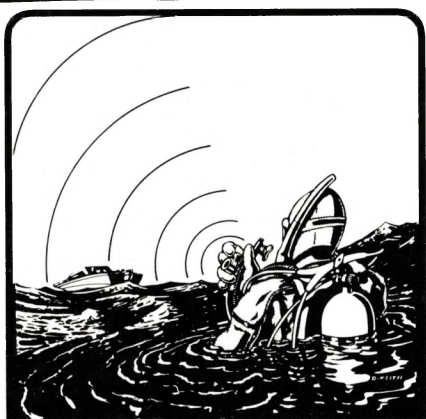
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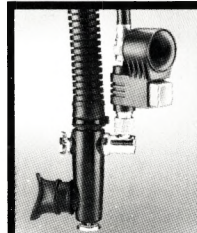
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## LETTERS

before the trip, I called the shop to reserve a rental wetsuit for the trip. So far, everything was cool. We were pretty excited about finally getting a chance to dive the crater. This was going to be the high point of our trip.

But wait. Monday night, at 8:45 p.m. to be exact, we got a call from Captain Nemo's to tell us that the trip had been cancelled. I asked the reason for the cancellation. They said there was no reason; it was just cancelled.

Disappointed, the next morning we drove down to the shop to get refunds on the trip? No problem, right? Wrong. Since I had used a credit card for my booking, I'd be able to get a refund from VISA, but my buddy, who had paid cash, was apparently out of luck. The shop supervisor said he wouldn't refund my friend's money. We mentioned that we had rented an extra car just to make the dive trip that day; the guys at the shop just looked at us as if they couldn't understand why we were telling them all our problems. So as pissed off as we were, we decided to just say screw it. Anything to get out of that shop.

So what I'm saying is, don't trust low-key dive operations. Do business only with reputable dive stores. Otherwise, your dive trip to paradise might end up a dive trip in hell.

Jim Emig  
Tracy, CA

### If Diving Isn't Fun, Then Why Bother Diving?

Regarding all the "Protectors of Mankind" in this world, I'm getting really tired of people (instructor levels on down) telling me that I'm not specialty certified so I shouldn't be doing certain kinds of diving. I'm an advanced certified diver but I've made my living hunting, salvaging, search & rescue diving and aqua farming for years now, and I've been pretty successful at it.

As far as I'm concerned, diving is very exciting and, yes, it can be very dangerous, but people should only do what they know they're capable of, unless of course it's in an instructional situation.

I tell you, I've met more quality teacher-types who weren't certified instructors than I've met bonafide instructors. I find that a lot of instructors are so conscious of the rules that they take the fun out of diving. And if you take the fun out of diving, why bother?

Thanks for touching on this subject. I recently started reading your magazine and I'll keep reading it until you start running too much advertising. Already I've added some of the tips you've talked

about to my personal bag of diving tricks. If you need some information about diving the Hawaiian Islands drop me a line.

Terry Hill  
Honolulu, HI

### Diver Airs Frustration over Dispute with Aqua Video

I'm writing this letter to make your publication aware of a current dispute I'm having with Aqua Video, Inc. of Miami, Florida. After numerous attempts to rectify the problem with Aqua Video by way of letters and telephone calls, I had no other recourse than to make the diving public aware of Aqua Video's unprofessional business conduct.

The events that have led to this dispute started on June 25, 1990, when I mailed away (with payment enclosed) for Aqua Video's "book" on underwater housings along with a video demonstration tape for the intended purchase of an underwater video housing. The buyers guide I received was different from the book I saw at the Scuba '90 dive show. As of this writing, no book and no video demonstration tape have been received.

On August 1, 1990, I mailed a cashier's check in the amount of \$1,089 for the purchase of an underwater housing for the Sony CCD-F50 retailing for \$899 and a hard shell carrying case retailing for \$169. I received the order August 9, but to my disappointment the housing did not fit/operate my camera. I placed a telephone call to Michael Hastings (president of Aqua Video) on August 11 to make him aware of the problem. He stated that he could not help me and proceeded to refer me to one of his employees who informed me that the wrong spacer had been installed on the housing and, in order to test the system, I would have to temporarily alter the spacer to enable testing.

After numerous attempts I was convinced that the housing did not match my camera, and so I made a decision to return the merchandise to Aqua Video for a refund.

I placed a call to Abby Hastings on August 13 to inform her of my disappointment and my intention of returning the merchandise. Ms. Hastings stated that the housing was possibly made to fit the Sony CCD-F30 and offered a replacement upon receipt of the merchandise. I declined the offer due to the fact that I would not have time to properly test and familiarize myself with the system prior to departing on a dive vacation on August 16.

Upon my return from vacation on September 6, I realized that a refund had not been received from Aqua Video. A telephone call was placed on September 10



by my wife who spoke to Mike Hastings again about the outstanding refund. Mr. Hastings stated that "he didn't see why we should receive a refund since housings were made for each of the cameras and that we must have given the incorrect information toward the purchase."

A follow-up call was made to Abby Hastings on the same day and we were informed that a refund check had been mailed on September 7, less the restocking fee of 30 percent. This I feel was not warranted due to the inability to properly test the system (which was never used) and the two short days that I had possession of the housing.

I placed a call on September 20, again inquiring about my refund. Ms. Hastings acted surprised and nervous that a refund had not been received. I asked her to immediately forward my monies due. Subsequent calls were made during the month of October. As of November 14, I have heard no word from Aqua Video, and have received no refund.

Ralph Coolbaugh  
Northridge, CA

### Commercial Fishermen Come to the Defense of... Commercial Fishermen

I see you're happy with the decision made by H.J. Heinz and Chicken of the Sea not to purchase tuna caught by purse seine nets. What you don't see is that this is sending fishing vessels to other parts of the Pacific that will most likely end up being overfished.

The U.S. purse seiners that were using all their energy in saving dolphins from incidental killings are now not fishing them and hundreds of U.S. fishermen are out of jobs.

Maybe a few of these dolphins could get together and start a fund for fishermen that worked and died trying to minimize their killings so that they can feed their families.

Captain Michael Tallarida  
Piti, Guam

I was going to subscribe to your magazine until I read with disgust your statements about the "Gill Net Tragedy." The only tragedy concerning gillnetting is not differentiating between Asian high seas gill nets, which are deadly and unmanaged, and California coastal gillnetters who are managed and observed by the California Department of Fish & Game.

If you want facts concerning gill nets, call Fish & Game and ask for a copy of the gill net observation statistics. If you want to observe a day of gillnetting, come out on my vessel and see for yourself.

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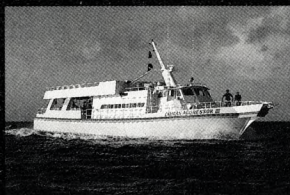


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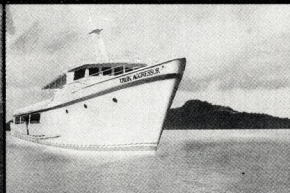
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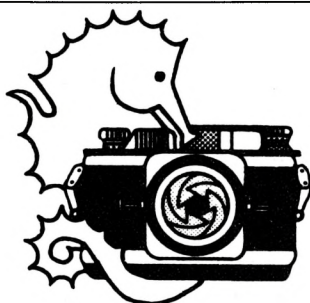
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## LETTERS

go scuba diving or out on a sport boat. Gillnetting is an efficient and ecologically sound means of harvesting seafood for the people of this state.

Ninety-two percent of my catch is marketable fish and five percent is unmarketable fish which are released alive. There were no gray whale deaths last year, and I have never caught a porpoise in a halibut, kingfish or angel shark net.

I have seen a reef after a charter boat full of gusto scuba divers, however, and I've seen the deaths of bar-cut abalone. I have turned in six "sport divers" via Fish & Game's Cal-Tip who had sacks of short abalone and out-of-season lobsters.

If PACIFIC DIVER is going to try to cop subscribers by "Facing the Issues," I think you should do it honestly, with facts and statistics, not with emotionally charged blanket statements like the "tragedy of gillnetting."

Let's be honest about who the bad guys are. It certainly is not California gill-netters. It's greedy sportsmen.

Diane Schoditsch  
Ventura, CA

Obviously we are not going to agree on this topic. Suffice it to say that we have approached all coverage of the "gill net tragedy" — a phrase we still feel is relevant — with facts and statistics, and we stand firmly behind everything that has been published on these pages about it. While you may be a conscientious gill-netter, based on results, few other members of your group can make the same claim.

Referring to sportsmen as the "bad guys" and gill-netters as an oppressed or misunderstood minority is really stretching it. And Californians must agree, based on the overwhelming support for the recently passed initiative Proposition 132, which will soon ban all gill nets from California's coastal waters. — Ed.

## Prop 132 Stood Above California's Confusing Initiatives

As I was standing in the voting booth on November 6, I was faced with many difficult choices. I'm concerned about the environment: I haven't eaten any tuna for a few years, I cut all the the plastic rings from my six-packs, I get paper bags instead of plastic.

Standing in the polling booth, I knew that my vote might really help this ailing Earth, but I was confused about what to vote for. I wanted to save giant redwoods, but which initiative would do that? I don't want poison poured on me from the air, but would these complex initiatives really prevent that from happening?

The one simple vote that I cast with confidence was a "Yes" on Proposition 132,



the initiative against gillnetting. Fresh in my mind was that picture PACIFIC DIVER ran in the November/December 1989 issue of a sea lion horribly injured by one of those "profitable" horrors. I'm happy to see that many other Californians felt the same way. I'm not so sure of the fate of the remaining giant redwoods, or whether I still need a malathion umbrella, but one thing I do know is that soon there will be no more gill nets wreaking havoc off our coast.

Laura Rodgerson  
Napa, CA

### I'll Take Advanced, Macho, Reckless and Alive Any Day

I was shocked when I read Jake Vincente's letter regarding Mike Dewing (July/August '90 issue). Mike certified me in June of 1987, and in all the advanced and specialty courses I have taken since then I have never known an instructor to be more interested in safety, education and understanding or less interested in macho recklessness and equipment sales.


Ironically, I think Mike would agree with Jake; macho recklessness has no place in sport diving. I think none of us want to see articles like the famous *Skin Diver* "I Learned About Diving From That" series wherein the authors get 9/10s of a page to boast about the most careless, irresponsible activities imaginable, and then close with "but now I realize how stupid I was and will never do that again!"

What I do think Mike was trying to say is that when you have an article on, say, the *Kona Aggressor*, wherein you describe the quality of the food and the sundeck but not the diving you aren't exactly catering to the advanced, or shall we say "serious," diver. Not because serious equals macho equals reckless, but because what you can see in the water should be at least as important as what you can see on your plate.

I'm also curious as to where, in his 32 years of diving, Jake Vincente finds his dive buddies. As far as I know, all of Mike's dive buddies are still alive and diving. It's hard to tell from the tease snippets in Jake's letter exactly what his buddies did wrong, but in the case of the mask implosion, for example, if you'll recall the banter on this subject over the past several months in *Underwater USA*, no mask, not even a cheap untempered one, should implode if it is properly equalized. Let's not confuse being advanced with being stupid.

Glenn Zucman  
Fullerton, CA

Letters to the editor should be addressed to Editor, PACIFIC DIVER Magazine, P.O. Box 6218, Huntington Beach, CA 92615. Letters may be edited for clarity and space.



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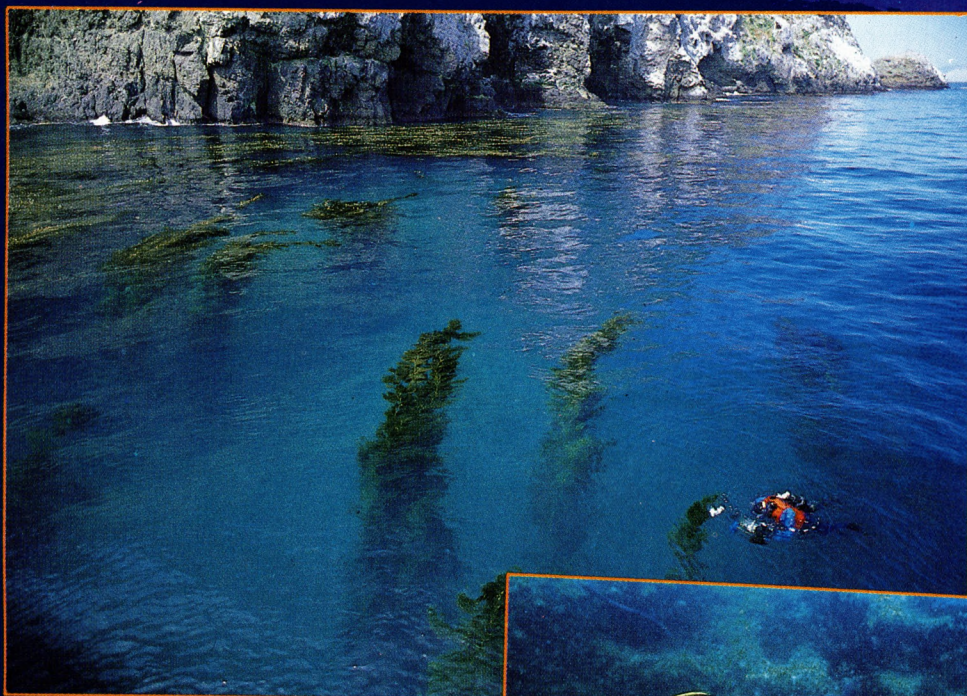
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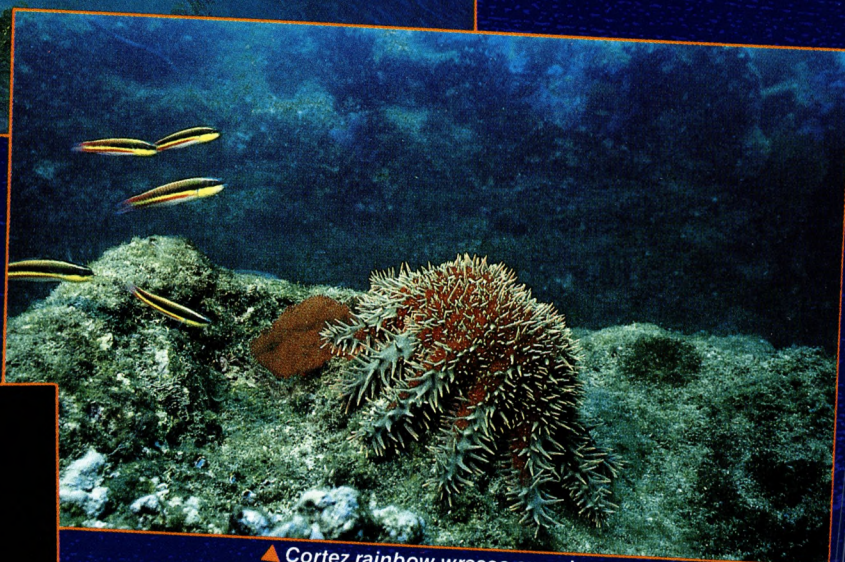
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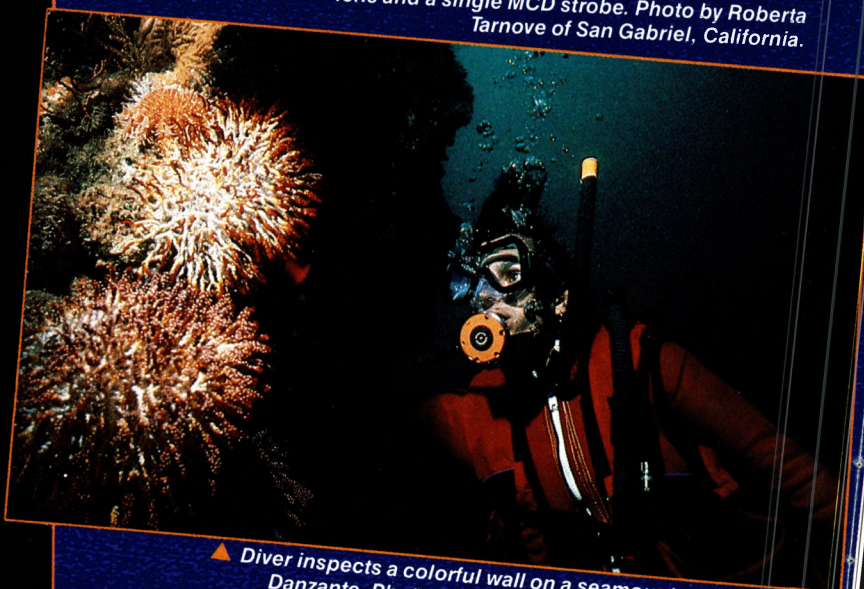


▲ Chet Tussey snorkels across a calm surface toward a kelp bed in crystal-clear water off Anacapa Island. Photo by Richard Herrmann of Poway, California.

▼ A yellowfin surgeonfish swims in from the darkness to investigate night divers off the Big Island of Hawaii. Photo by Glenn Cummings of Kaneohe, Hawaii.



▲ Cortez rainbow wrasse examine a crown of thorns sea star at Cabo Pulmo, Baja California. Taken with a Nikonos V set at f8 and 1/60 second, a 20mm Nikor lens and a single MCD strobe. Photo by Roberta Tarnove of San Gabriel, California.



▲ Diver inspects a colorful wall on a seamount near Baja's Isla Danzante. Photo by John Fisher of Sunnyvale, California.

**if**

you've taken photographs that you feel represent the diving lifestyle, and you'd like to share them with other divers, we invite you to submit them to PACIFIC DIVER for possible publication.



# Pictorial

*Standing between a rock and a hard place!  
This frogfish blends into its reef  
surroundings on Hawaii's Kona Coast. Photo  
by Ellen Ludwig of Colorado Springs,  
Colorado.*



▲ Dean Bingham peers over an anemone-covered ledge at Empire Landing, Catalina Island. Photo by K.C. Ammann of Los Altos, California.



▲ Colorful fish, clear water and dramatic coral formations create a stunning Fiji reef landscape. Photo by Ken Howard of San Anselmo, California.



Sometimes the sun can get a little intense at Baja's El Bajo seamount. Taken with a Nikonos camera, a 28mm lens and 100 asa film. Photo by Robert Patsiga of Long Beach, California.

If your photo is selected, it will appear on these pages with a photo credit (\$25 will be awarded for selected photographs). To have your photos considered for publication, send your color transparencies to Editor, PACIFIC DIVER Magazine, P.O. Box 6218, Huntington Beach, CA 92615, with a sentence or two describing each shot, where it was taken, and what equipment was used. Photos must be submitted with a self-addressed stamped envelope to ensure their return.

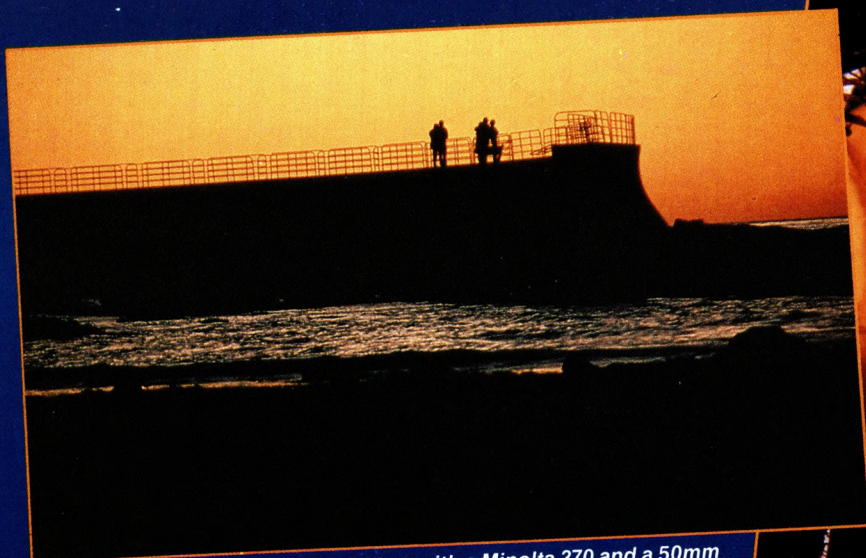


# Pictorial

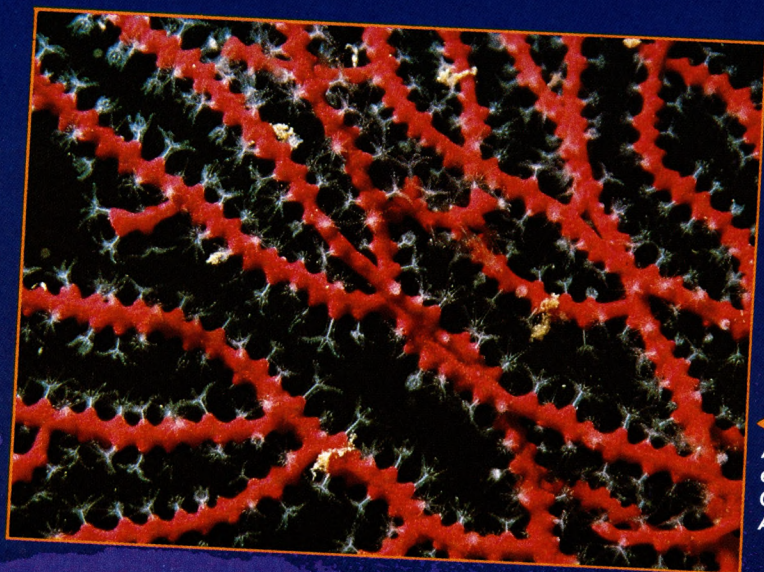
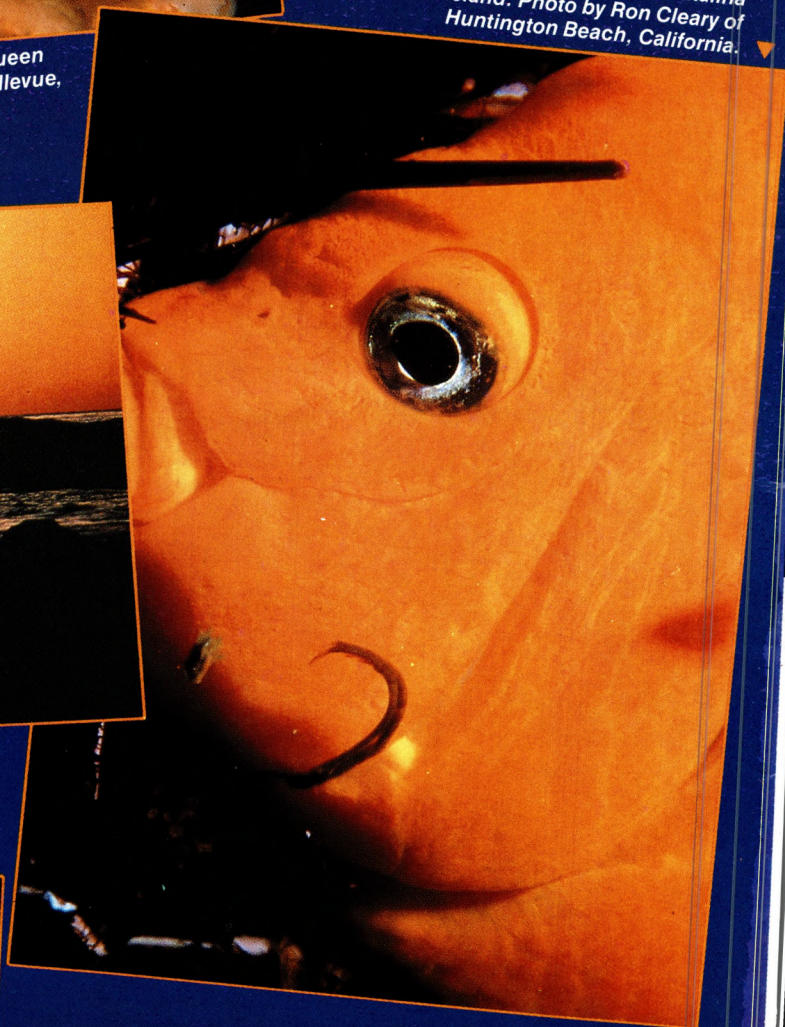


▲ A vermilion starfish excretes sperm over a bed of eggs in the Queen Charlotte Straits, British Columbia. Photo by Judi Brooks of Bellevue, Washington.

Garibaldi moves in for a closer look at Arrow Point, Catalina Island. Photo by Ron Cleary of Huntington Beach, California.



▲ Sunset at Casa Cove, La Jolla. Taken with a Minolta 370 and a 50mm lens. Photo by Bob Gladden of San Diego, California.



▲ A close-up shot of a red gorgonian with its feeding polyps extended, taken during a night dive at Pyramid Cove, San Clemente Island. Photo by Marty Campbell of Phoenix, Arizona.



# DIVERS UPDATE

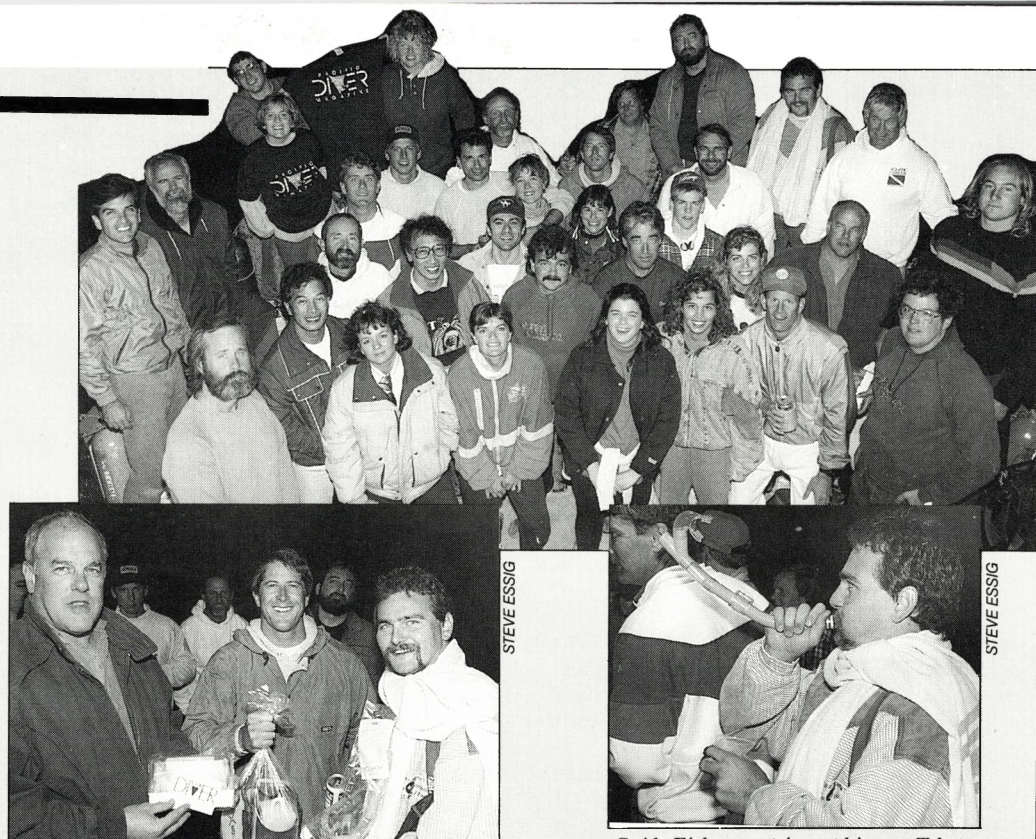
## Divers Gather to Party Down with PACIFIC DIVER and Tabata USA

It was a wild time on the high seas last November 25th when the dive boat *Golden Doubloon* set out from San Pedro Harbor heading for Catalina Island. On board was the motley staff of PACIFIC DIVER and an equally motley crowd of diving fanatics just chomping at the bit to get wet.

The *Doubloon* reached the island beneath sunny skies and everybody proceeded to enjoy 50-foot visibility in the kelp beds at Starlight as well as around the interesting underwater terrain at Blue Cavern Point and the West End quarry.

By the time the last diver had climbed out of the water from the final dive of the day the *Golden Doubloon's* get-down skipper Greg Elliott had the barbecue coals heated up and proceeded to lay on a full-blown steak feast as the sun sank behind the island.

After dinner PACIFIC DIVER T-shirts were passed out to all and a Tabata mask, snorkel, a pair of fins and PACIFIC DIVER dive lights were raffled off to lucky



Tabata USA raffle winners (from left) Dave Caouette, Bob MacNamara and Guido Eichmann.

winners. A couple of thundering blasts from Greg's vintage pirate cannon finished off a full day of food and fun-diving.

PACIFIC DIVER boat dives are scheduled throughout 1991. They will be leaving from various harbors and heading for dive

destinations up and down the coast of California. For more information or to reserve space on future trips, call (714) 361-9765.

## Say Goodbye To Gill Nets! California Voters Push Prop 132 Over the Top

Assemblywoman Doris Allen (R-Cypress), author of Proposition 132 and chair of the Committee to Ban Gill Nets, pledged to continue her work to protect California marine resources shortly after the Marine Resources Protection Act of 1990 passed at the polls with 55.5 percent of the statewide vote. The initiative was one of only six (out of 28) statewide ballot measures to pass in the November 6 election.

"Obviously, voters read the ballot arguments and know what havoc these nets cause to our marine environment," said Allen. "I feel very gratified that despite voter unrest with incumbents and all the votes against the other environmental propositions (128, 130, 135 and 138 went down in flames), voters felt that Proposition 132 was good public and environmental policy and good government. We even won in San Diego County, which is the stronghold for gill net fishermen."

According to Allen, the reason the measure was even on the November ballot was because of commercial fishing lobbyists' past successes in killing numerous pieces of anti-gill net legislation she had authored. "People watched the decline of our marine resources and saw that little was being done," declared Allen. "The passage of Proposition 132 was a clear victory for the resource and for all Californians. We had a broad-based, bipartisan coalition of groups supporting us, and it showed."

It was on the pages of the November/December 1989 issue

of PACIFIC DIVER that the tragedy of gill nets was first publicized in the diving industry. Writer/photographer Tom Campbell's article entitled "Incidental Kills," accompanied by dramatic photographs of non-targeted marine animals hopelessly ensnared in gill nets, drove home the fact that a massacre was occurring beneath the surface of our coastal waters. According to Allen, the article and photographs helped rally California sport divers around the campaign that eventually got Proposition 132 on the ballot.

Opponents of Proposition 132, led by the Consumers for Marine Resource Protection (a front group for the California Gill-Netters Association), made several false claims "which just did not hold water with voters," explained Allen, who added that there were numerous election law violations committed by Proposition 132 opponents, such as failing to file required reports and failing to properly identify themselves as funding misleading literature.

"Prop 132 opponents claimed the price of fresh fish would

skyrocket if the initiative passed, even though less than two percent of the fish sold in California is caught with gill nets within three miles of our coast," explained Allen. "They also claimed that jobs would be lost, even though Prop 132 compensates gill net fishermen so they can switch to less destructive fishing gear during the three-year gill net phaseout period."

Though the victory is sweet, Allen cautions against complacency. "We need to fight against any type of commercial fishing gear that is as environmentally damaging as gill nets, such as trawl nets," she warned. "You can bet gill net fishermen and their allies will seek to get back into our coastal waters with equally efficient killing systems, in spite of the fact that responsible alternatives do exist."

Allen pledged to establish an "800 Gill Net Hotline" as soon as possible to allow Californians to regularly report the locations of gill nets and related information prior to their being banned completely in 1994.

*Continued*



PACIFIC DIVER publisher Bob Twilegar (left) and Western Outdoor News® publisher Burt Twilegar celebrate with Doris Allen.



## DIVERS UPDATE

### PADI Lends a Hand in Coastal Cleanup Campaign

Figures show that the annual Coastal Cleanup campaign, sponsored by the Coastal Commission and cooperating organizations, set new records for both participation and amount of trash removed from the state's shoreline.

More than 16,000 volunteers took part in the September 22 beach cleanup, breaking last year's record of 10,000 participants and collecting more than 306,000 pounds of trash.

Volunteers rid the beaches of styrofoam, plastic strapping bands, line, netting and six-pack rings, all of which endanger marine wildlife through ingestion and entanglement. An assortment of other unsightly trash was also collected, ranging from disposable diapers, syringes and old mattresses to abandoned car parts. Along the Alameda and Contra Costa counties shorelines alone, 1,375 old tires were removed and taken to a Central Valley



*PADI's cleanup team pauses for a photo before heading out to the beach with their trash bags.*

plant for processing as fuel for energy production. Volunteers collected thousands of aluminum, glass and plastic beverage containers for recycling.

Among the participants in the Coastal Cleanup was a PADI team consisting of 70 staff members, friends and family. They collected more than 200 pounds of debris on a popular one-mile stretch of beach in Orange County.

The PADI Headquarters beach cleanup was organized in conjunction with Project A.W.A.R.E. — Aquatic World Awareness, Responsibility and Education —

PADI's effort to influence the preservation of the aquatic realm. During September, similar cleanup efforts were organized by PADI members around the world, including Hong Kong, New York and Cozumel.

Detailed records of the types of debris collected were made by all participants in the beach cleanup and will be entered into the National Marine Debris Database maintained by the Center for Marine Conservation and used as evidence to stop pollution at its source. A complete report will be released in the spring.

### Shipwreck Looters Get Slapped with \$132,000 in Fines

Seven Los Angeles-area scuba divers have been fined a total of \$132,000 for removing artifacts from two historic shipwrecks in the Channel Islands National Park and the Channel Islands National Marine Sanctuary. Penalties in the civil prosecution ranged from \$1,000 to \$100,000. The judge's 34-page decision, dated October 17, 1990, concludes a joint enforcement effort between the Department of Interior's National Park Service (NPS) and the Department of Commerce's National Oceanic and Atmospheric Administration (NOAA) involving the prosecution of 20 individuals for unlawfully taking shipwreck artifacts during a scuba diving trip off the Channel Islands. The investigation also led to successful criminal prosecutions that were recently concluded in state court. In those proceedings, all but one defendant pleaded either guilty or no contest and received sentences ranging from \$750 in fines to community service or jail sentences of up to 30 days.

The federal civil prosecutions brought by NOAA were based on violations of NOAA regulations for the Channel Islands National Marine Sanctuary which prohibit the damaging or removal of

historical artifacts from the sanctuary or the excavation of the seabed. The regulations are enforced jointly by the NPS and by the National Marine Fisheries Service of NOAA. Most of the shipwrecks known to exist around the Channel Islands are located in both the park and the sanctuary.

Of the 20 original individuals charged in the civil action, 13 settled while seven others contested the charges at a hearing. In all, 52 counts charging civil and criminal violations of federal and state laws were brought against the various individuals, including both the owner and the captain of the charter dive boat. The defendants had removed hundreds of artifacts from the *Winfield Scott*, a gold rush-era vessel which was wrecked off Anacapa Island in 1853, and the *Goldenhorn*, which ran aground off Santa Rosa Island in 1892. Many of the artifacts that were recovered by federal agents have been turned over to the NPS for inclusion in its collection of cultural and historic resources from the Channel Islands.

According to a spokesman for the Channel Islands National Park, this was the largest archaeological protection case in U.S. history in terms of the number of defendants successfully prosecuted at one time with criminal and civil charges.

### Got a Sweet Tooth? Then Check Out Monterey's Chocolate Abalone Dive

Aquarius Dive Stores are sponsoring the 7th Annual California Chocolate Abalone Dive Saturday, March 30, 1991. This event is unofficially the largest annual scuba dive in California. Pre-registration is \$17 and same-day registration is \$20. A portion of these proceeds benefit the Pacific Grove Recompression Chamber and Diver's Alert Network (DAN). Numerous diving equipment manufacturers, hotels, restaurants and other generous companies sponsor this fund-raiser by donating hundreds of prizes which are claimed by divers who find the chocolate abalones that are hidden underwater in Monterey Bay. Last year 599 divers searched for 400 prizes worth over \$22,000.

Check-in begins at 7 a.m. at the Aquarius Dive Store at 2240 Del Monte Ave. The dive begins at 11 a.m. at San Carlos Beach next to the Coast Guard Pier in Monterey. Prizes not claimed by 1 p.m. are raffled at a beach party after the dive. Preregistration is recommended but not required. You can preregister by phone with a credit card number or you can register by mail. No refunds, please. Entry forms are available at local dive stores.

Send your registration fee of \$17 per person to 2240 Del Monte

### B.C. Groups Band Together to Save the Strait of Georgia

The Strait of Georgia is a sheltered sea situated between Vancouver Island and the mainland of British Columbia. Its deep fjords reach into the ice fields of the Coast Mountains; its wooded islands bask in rich gulf water. For centuries, the Coast Salish people have lived in harmony with the 1,100 other species of mammals, birds, fish invertebrates and algae known to cohabit the waterway.

Today, the Strait of Georgia is in big trouble. Over one million gallons of toxic waste flow into this tide-locked basin every minute from pulp mills, mines, city sewers, oil refineries, chemical plants and other industries.

Fisheries have been closed due to toxic contamination. In some areas, high percentages of fish have been found to be affected with tumors and lesions. Migratory salmon have accumulated enough organochlorine to damage their immune and reproductive systems. Lingcod and spring salmon are near extinction. Heron colonies fail to reproduce. Workers and residents in mill towns suffer high cancer rates.

The Save Georgia Strait Alliance (SGSA) is a coalition of environmental, community, recreational, native and labor groups determined to halt further pollution of the Strait of Georgia and allow the healing to begin.

SGSA is hosting the "State of the Strait" conference at the Coast Bastion Inn in Nanaimo, British Columbia, the weekend of February 22-24, 1991. This public inquiry into the health of Georgia Strait and the major pollution issues affecting it will focus on formulating community strategies to reverse the destruction and protect this ecosystem for future generations.

If you wish to join the alliance (\$10), attend the conference (\$40), submit a paper or make a donation, write to SGSA, Box 122, Gabriola Island, British Columbia, Canada, V0R 1X0, or call (604) 247-8670. Make checks payable to SGSA. For tax exempt donations, make checks payable to the Sierra Club Foundation, marked SGSA.

Ave., Monterey, CA 93940. Commemorative T-shirts will be available for purchase. For more information contact the Aquarius Dive Stores at (408) 375-1933 or 375-6605.



# DIVERS UPDATE

## Looking for a Job? PADI Makes the Search Much Easier

Thanks to a new service available through PADI, a PADI instructor looking for a job, and a dive store, resort or dive boat looking for a PADI instructor, will have an easier time finding each other. The PADI Placement Service acts as an information clearing house for positions-vacant or instructors-available. The information may be accessed by both PADI instructors and any business seeking to employ a PADI instructor.

The placement service is accessed by calling (714) 540-7234, extension 281, between 7 a.m. and 4 p.m. (Pacific time) Monday through Friday and speaking with the placement coordinator. (Before 7 a.m. and after 4 p.m. a voice message can be left at extension 468.)

For prospective employers, the coordinator checks placement computer files for instructors desiring positions who match the requested requirements. Contact information for anyone listed is provided to the prospective employer. If there are none listed, the job opening is placed in the

computer file. PADI instructors calling the placement service will be referenced to open positions matching their requirements. If no appropriate positions are available, they are listed in the computer file for referral to prospective employers.

For more information about PADI's placement service, contact the above number or write to PADI, 1251 E. Dyer Rd., #100, Santa Ana, CA 92705-5605.

## The Results are in on Monterey's 10th Annual Beach Dive Photo Competition

Eighty-five contestants entered this year's photo competition, the largest turnout in the history of the event. Entries were judged in Diver, Marine Life, Macro, Humor and Above-Water categories, which were then broken down into Novice, Amateur and Open ability levels.

The top team award went to the Sea Deucers from San Diego while individual top awards were won by Esther Ratterree for best Macro, Al Huelga for best Marine Life, and Gil Cruz for both best Diver and Best of Show.

## It's Show Time! Seaviews '91 Scheduled for March 9-10

Seaviews '91, Northern California's scuba diving show, will be held March 9 and 10 at the Oakland Hyatt Convention Center in Oakland, California. The event includes two days of diving-related exhibits, fashion shows, an underwater photo display, seminars and a Saturday night underwater film festival.

There will be a variety of exhibits offered, including equipment, dive travel, underwater

photography, diving publications and dive stores. Seminar topics include travel, photography, medicine, underwater hockey, equipment maintenance, wreck diving and much more.

The Northern California Underwater Photographic Society will present the 27th Annual Sea '91 on Saturday evening, March 9, featuring films by well-known underwater cinematographers.

For more information, contact Seaviews '91 at P.O. Box 1645, Union City, CA 94587-6645.

## CINMS Photo Contest Winners on View at the Sea Center

"Solo Flight," Santa Barbara photographer Bryant Maraist's dramatic backlit shot of seabirds off Anacapa Island, won the \$1,000 grand prize in the professional division of the third annual Channel Islands National Marine Sanctuary photography contest, *Images '90*. The shot was taken in the late afternoon near Cat Rock on the back side of Anacapa. Maraist used Kodachrome 64 film in a Canon F-1 camera body with a 300mm 2.8L lens. Maraist, a Texas native, is a recent graduate

of Brooks Institute with a degree in commercial photography.

Larry Kepco of Goleta won the \$500 Grand Prize in the contest's Amateur Division for his image of a humpback whale lunge-feeding in sanctuary waters near Santa Rosa Island. Using a Nikon FM2 with a 180mm lens, Kepco shot the image from the deck of the *Solera* last June on a day when the channel was unusually calm. A computer programmer who also has a book of poetry due to be published later this year, Kepco hopes to combine his interest in photography with his work as a writer.

*Continued*

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## DIVERS UPDATE

The contest attracted more than 88 entries this year. The winners were selected by a panel of judges that included Ernest Brooks II of Brooks Institute and James King, an accomplished underwater photographer. In addition to the cash award for grand prize, winners received dive trips to the Channel Islands, Kodak Professional Film and gift certificates.

For the first time this year, entrants were asked to enter the contest as either professionals or amateurs. Within the two divisions, entries could be submitted in three categories: Underwater Close-Up, Underwater Wide-Angle and Topside.

*Images '90* was made possible by generous donations from the Professional Photography Division of the Eastman Kodak Company, Art Resources, Richard Armstrong Color Printer, Gerards Photo Lab Inc., Brooks Photographic Center, the *Spectre* and *Liberty* dive boats, Gold Coast Scuba, Truth Aquatics, Bob's Diving Locker, Underwater Sports, Diver's Den, Aquatics, Aqua Ventures and The Nature

Conservancy.

*Images '90* is cosponsored by the sanctuary and the Sea Center. The contest is aimed at enhancing public awareness of the rich diversity of natural and cultural resources that make the waters of the Channel Islands National Marine Sanctuary so exceptional.

Maraist and Kepco's photographs, along with 22 other winning images, will be on view at the Sea Center, 211 Stearns Wharf in Santa Barbara through March 31, 1991.

For more information about the Channel Islands National Marine Sanctuary photo contest or other sanctuary programs, call (805) 966-7107.

### Marty Snyderman to M.C. CIUPS's "Underwater 1991"

The Channel Islands Underwater Photographic Society (CIUPS) will be presenting its seventh annual underwater film show, "Underwater 1991," on Saturday, February 23, 1991. Marty Snyderman, well-known underwater photographer and writer, will be the master of

ceremonies for an evening of underwater films and slide shows, including the display of the winners of the CIUPS-sponsored "California Underwater Photographic Competition."

"Underwater 1991" will be held at the Dorill B. Wright Cultural Center at 575 Surfside Dr., Port

Hueneme, at 7:30 p.m. Admission is \$11. To send for tickets (available after February 1) mail a check and a self-addressed, stamped envelope to CIUPS, P.O. Box 6922, Oxnard, CA 93031. Tickets will be \$12 at the door the night of the show. For more information contact Terry Schuller at (805) 984-7759.



Stephen Saunders, 28, of Huntington Beach displays a 10-pound bug and two five-pounders that he grabbed during a five-day trip out to Cortes Banks aboard the dive

boat *Encore*. Over the course of the trip Saunders bagged a total of 21 lobsters. Boil the water and let's eat!



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# A Land Called Hanalei

*The tropical north shore of Kauai offers uncrowded diving in tranquil surroundings.*

Looking down onto Hanalei Bay. Inset: Diving the drop-off at the Oceanarium.



Article by John Brumm

Photos by Steve Essig

Now this is what a tropical island is supposed to look like! There's not a hotel, a condo complex nor a souvenir stand in sight. Everywhere we look our eyes are startled by lush, vibrant greenery. Thick salt-sweet air drapes around our shoulders like a muggy blanket. The sun is fierce in spite of the early hour but we're comfortably shaded beneath a heavy jungle canopy.

We're standing on the bank of the Hanalei River on the north shore of Kauai, a handsome river that meanders



down from the mountainous interior. The morning is so still our voices echo in the quiet. For some reason we feel a need to speak softly, as if a shout or a guffaw will shatter the protective glass of this perfect picture.

I've been seduced by the sounds and smells of the tropics. Though the river is quiet in my head I hear jungle birds cawing and monkeys screeching in the trees all around me. Now I hear a boat approaching from upriver. I can feel the vibrations of its engine resonating in the heavy air, I can hear its bow wake gurgling

Below, and they appear to be looking for us.

I wave. The little boat idles down and eases over to our side of the river, drifting to a stop in knee-deep water. Holding our gear above our heads, we wade out to the boat and climb aboard. We're greeted by Ken and Linda and their skipper Red. As we take a seat along the gunwales Red backs off the sandbar and turns out toward the mouth of the river and Hanalei Bay.

It's September, near the end of the diving season on Kauai's north shore, and Hanalei Bay is getting cocky. Four- to six-

#### KAUAI'S RUGGED NORTH SHORE

Kauai is the oldest and most remote of the principle islands in the Hawaiian chain. Its nickname, the "Garden Isle," is well-earned. It's by far the most "tropical" island in Hawaii.

On Kauai you'll find most of the year-round diving action along the south shore and the Na Pali coast. However, if you happen to hit the island between late May and early September, there's the added option of diving the rugged north shore.

Ken and Linda have been in Hawaii since 1979 and have been running dive



Above: *Bubbles Below* eases up to take on divers. Below: The diving is deep at the Oceanarium, with coral formations found along the outcroppings.



in the muddy water. Good God, it's the *African Queen* coming downriver! Any second now I'm going to see its rickety bow snake out from around the bend, Humphrey Bogart at the helm sneaking sips from his bottle while being ravaged by Kathryn Hepburn's judgmental sneers.

But it's not Bogey's *African Queen* that swings into view; it's Ken and Linda Bail's baby-blue 24-foot Radan dive boat *Bubbles*

foot breakers tumble into shore carrying surfers on their foamy crests. Red navigates toward a passageway through the surf where the waves aren't breaking, then he accelerates for open water. It's quite a sensation to be powering out of the bay not more than 50 yards away from a pack of surfers racing their short boards down wave faces, heading in the opposite direction.

OURS IS THE ONLY  
BOAT IN SIGHT. WE HAVE  
THIS WHOLE OCEAN TO  
OURSELVES!

charters out of Hanalei Bay since 1984. *Bubbles Below* has the distinction of being the only dive vessel authorized to operate out of Hanalei Bay during the summer (nobody dives the north shore in the winter, when Hanalei Bay is a surfer's paradise).

Based on the water conditions, it looks as if this is going to be one of *Bubbles Below*'s last Hanalei charters of the year. But during peak season Ken and Linda regularly run two trips a day out of Hanalei Bay. The morning trip departs at 7:30 a.m. and returns to shore at 11:30 a.m.; the afternoon trip leaves at noon and returns at 4 p.m. Both trips are two-tank/two-location dives.

Since *Bubbles Below* is a mom and pop sort of dive operation, Ken and Linda do all their own dive guiding. And what they lack in big-buck amenities they make up for with a contagious enthusiasm for their work. Both divers are great lovers of marine life; on the way out to the dive sites we're treated to an interesting talk on the local sea life that we're going to be encountering.

#### OUT HERE BY OUR LONESOME

In most vacation dive destinations I find there's one slightly irritating sensation that I can't seem to shake, like an itch I can't scratch. That's the feeling that there are just too damn many divers around. You've got all those divers from all those hotels boarding all those boats, and they're all going to the same dive site that I want to go to. And they usually get there first.



*Marine life enthusiasts, Ken (left) and Linda Bail treat PACIFIC DIVER staffers Don Bellavance and John Brumm to an interesting talk on local sea life on the way out to the dive sites.*



### **You Mean we Have to Pay?**

**Bubbles Below** charges a basic price of \$75 for a two-tank/two-site dive, either in the morning or afternoon. That includes tanks, weights, backpacks and a dive computer. Juices, sodas and munchies are also provided.

If you don't have any gear, the trip and all necessary rental equipment (including, in addition to the gear included in the basic trip price, a BC, regulator, wetsuit — either  $\frac{3}{16}$ -inch or  $\frac{1}{4}$ -inch — and for those who need them, fins/booties and a mask with

snorkel) will cost you \$90. If you need only a wetsuit or a BC or a regulator, add \$5 to the basic trip price for each item.

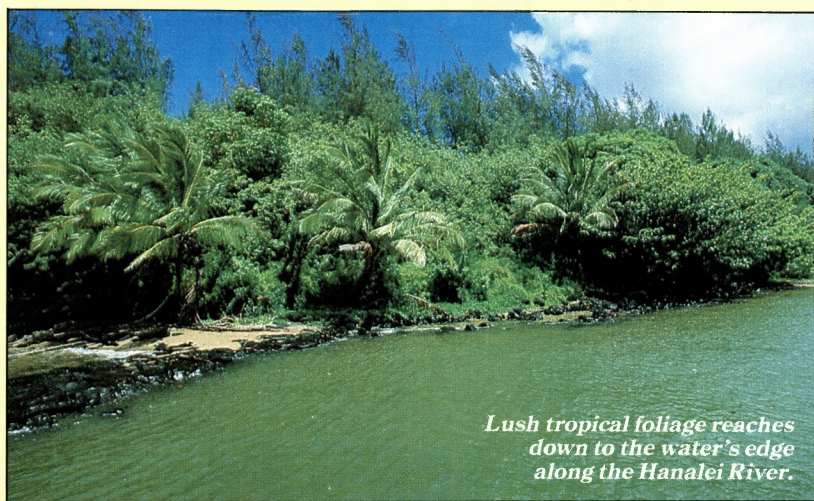
Ken and Linda use aluminum 80s, although 100-cubic-foot tanks are available. They also offer a photography service using a wide-angle lens and a wide-angle strobe. For \$25 they will shoot 12 shots of you diving and will have them ready for you to pick up by the next morning.

Right now I'm getting that itch. Every once in a while I jerk my chin over my shoulder, ever watchful for any dive boats that might be gaining on us. But there's nobody there. And then it hits me. I look all around. Ours is the only dive boat cruising this stretch of the Kauai coast. Come to think of it, ours is the *only* boat in sight. We have this whole ocean to ourselves!

Our first dive is at a place called the Oceanarium. The depths range from 65 to 140 feet, although Ken and Linda prefer to max out the dive at about 100 feet. Since we're riding the tail end of the season the conditions aren't the best. Visibility varies from 60 to 80 feet but temperatures are solid in the high 70s, even at depth.

At the Oceanarium the underwater topography is breathtaking. There are awesome pinnacles with yawning overhangs and deep cracks in the walls that tumble down into the abyss. All along the pinnacles we see stalks of rare black coral, colorful sponges, coral, rare fish. The solitude interplays with the rugged beauty of the terrain and makes me feel like I'm the first diver to explore this place.

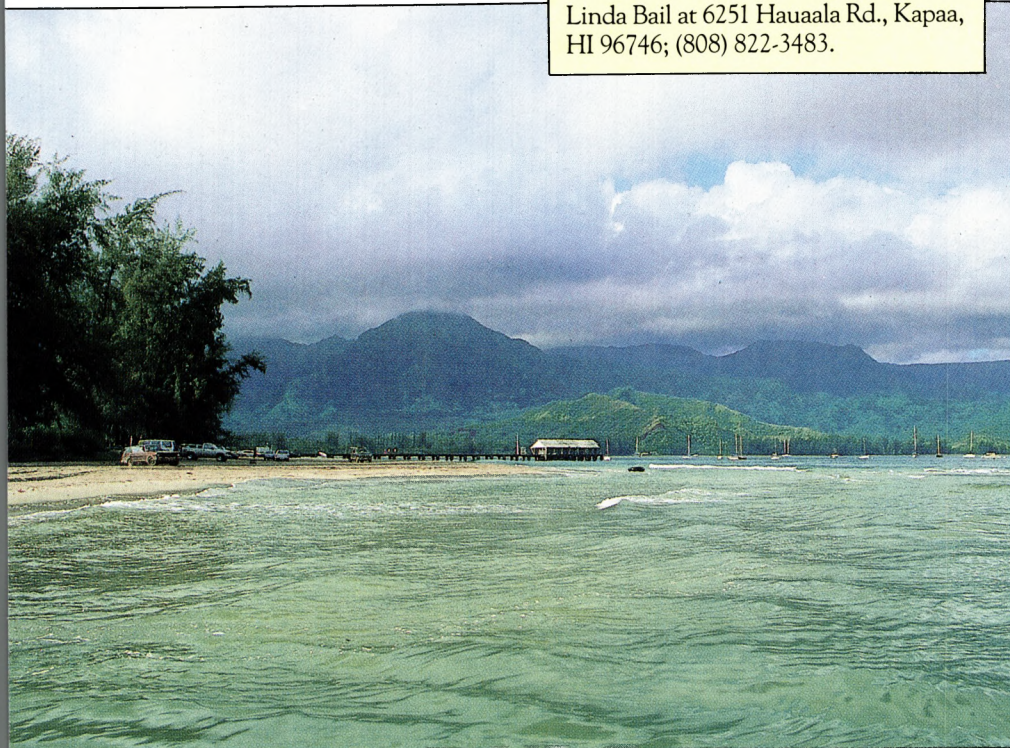
After a five-minute safety stop at 15 feet we climb aboard and change tanks as Red pulls up anchor and cranks *Bubbles Below* over to a spot that's alternately called Blue



*Lush tropical foliage reaches down to the water's edge along the Hanalei River.*



*Near the end of the diving season Hanalei Bay starts kicking up, but during the summer months the bay is smooth as a lake.*



### Who You Gonna Call?

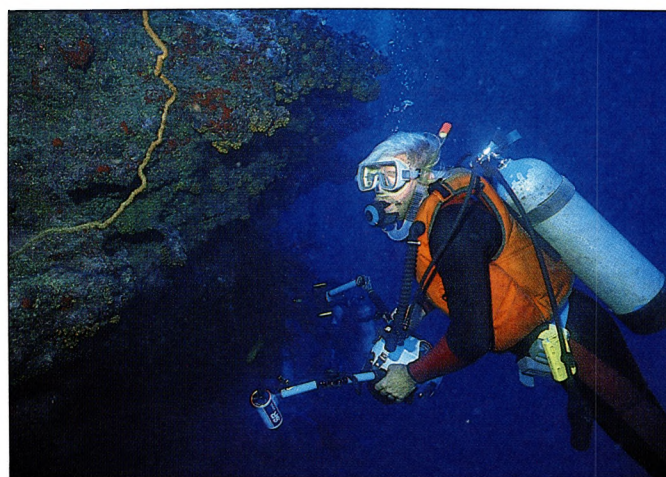
For more information on *Bubbles Below* charters you can contact Ken or Linda Bail at 6251 Hauaala Rd., Kapaa, HI 96746; (808) 822-3483.

Bluffs or Green Acres, depending upon what color the water is when you get there.

Today we call the spot Green Acres. The water is a little murky, but the visibility is still 50 feet or so. Depths at Green Acres range from 45 to 100 feet. There are lots of turtles, colorful reef fish — like the relatively rare long-nose hawkfish — and octopuses that you can play with if your hand is quick enough. Scattered along the vertical wall are black coral trees and interesting volcanic and coral formations.

*Bubbles Below* offers a selection of 14 dive spots along the north shore ranging from beginner to advanced. The entire area is the home of turtles, octopuses, sharks and dolphins. Over the course of our two dives we see plenty of turtles and octopuses. And on the way back to shore

THE DIVING ALONG THE NORTH SHORE ISN'T NECESSARILY ANY BETTER THAN WHAT YOU CAN FIND ALONG THE SOUTH SHORE OR ON THE NA PALI COAST, BUT IT CERTAINLY IS DIFFERENT.



*Ken and Linda Bail have been running summer dive charters along Kauai's north shore since 1984.*

we run across a school of dolphins. Pulling out far ahead of them, Red cuts the engine while we slip into the water with our snorkeling gear to watch the animals cross our path. Sure enough, they cut right beneath us, look us over, then rocket away. We climb back into the boat and head for shore. Unfortunately, a shark encounter must wait until next time.

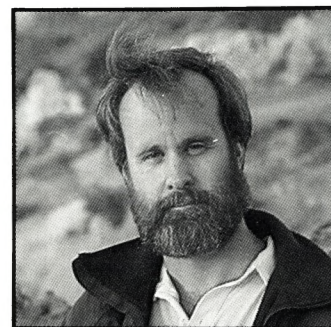
During this time of year, the diving along the north shore isn't necessarily any better than what you can find along the south shore or on the Na Pali coast, but it is certainly different. North shore diving has a rugged flavor to it that will raise the hairs on the back of your neck. Combine that with the absence of diving pressure and the magic of Hanalei Bay and its adjoining river, and you have the stuff that wet dreams are made of. □

*John Brumm is the editor of PACIFIC DIVER.*



## FIRE AND ICE

*What direction are our temperatures heading? The debate rages on, but only geologic time will tell.*



Climate is regulated by the complex interaction of the ocean, the atmosphere and the positioning of Earth's land masses. Chemical components in the ocean are constantly reacting to gases in the atmosphere, while over periods spanning millions of years land masses moving across the globe position ice sheets so that they interrupt the flow of heat around the planet. Change any part of this equation and you change the climate of Earth.

At least six times in Earth's history Ice Eras have dominated the climatic picture. An Ice Era is different than an Ice Age. When permanent glaciers exist on at least one of the poles (like they do now) Earth is experiencing an Ice Era. Ice Eras last about 50 million years.

Ice Ages, in contrast, last about 120,000 years and occur within an Ice Era. During an Ice Age the permanent glaciers at the poles experience tremendous growth, extending well into the lower latitudes. Dozens of Ice Ages occur within one Ice Era, interspersed with 10,000-year-long breaks in the extreme cold weather called "Interglacials." We are currently in an Interglacial period.

A 50-million-year Ice Era seems like a long time until you realize that between Ice Eras Earth experiences warm "Nonglacial" periods that last 150 million years. The 50-million-year Ice Era and the 150-million-year Nonglacial period make up a 200-million-year climatic cycle that has been occurring like clockwork for billions of years.

### Dinosaurs Dominate a Moist, Warm World

About 200 million years ago Earth emerged from an Ice Era and entered into a 150-million-year period of warm weather. Polar ice melted, raising the sea level hundreds of feet and covering a large percentage of the land with warm, shallow inland seas. Humidity increased, which encouraged the growth of lush, thick jungles of broad leaf plants. It was the era of the dinosaur.

Dinosaurs loved this moist, warm weather. In fact, their survival depended on it, since their cold-blooded bodies were

**W**ARM-BLOODED MAMMALS CRAWLED OUT FROM UNDER ROCKS TO ASSUME THEIR HISTORIC ROLE AS THE ANCESTORS OF MAN.

unable to generate heat. For dinosaurs it was heaven on Earth, and they dominated their realm while small, warm-blooded,

### What Triggers Ice Eras?

One theory postulates that during the age of dinosaurs a giant asteroid hit Earth producing a giant ash cloud that blocked the sun for decades, cooling the planet. There's a similar theory involving a giant volcanic eruption, and others suggest just a general increase in volcanic activity. But how could these events occur on such a regular 200-million-year schedule?

More recently, scientists have been pointing at the positioning of the continents as a major factor in triggering Ice Eras. Continents are a necessary base for ice to form. During the last two Ice Eras the continents have been conveniently located at the poles. This implies that the movement of the continents has a cycle to it. Do the continents move from one pole to the other on a 200-million-year schedule? After all, at the beginning of the last 200-million-year cycle only one giant continent (it sat at the South Pole and was named Pangaea) existed on Earth. The continents that we know today began splitting off from Pangaea and floating northward, forming a circle millions of years later around the North Pole. Who knows, perhaps they will start migrating back down toward the South Pole now.

rodent-like mammals scurried about in the underbrush.

But, of course, all cycles eventually come to an end, and after 150 million years of this tropical weather Earth's climate suddenly changed. Air temperatures cooled, glaciers gathered at the poles and the level of the ocean dropped. The dense jungles that had covered most of Earth retreated to the lower latitudes while more spartan narrow-leaved vegetation replaced it in the upper latitudes.

Unable to steel their systems from the onslaught of colder temperatures, almost overnight the dinosaurs disappeared. In their place, the warm-blooded mammals crawled out from under rocks and bushes to assume their historic role as the ancestors of man.

### Coral Reefs Help Scientists Fine-Tune Theory

What causes the arrival and departure of Ice Eras? This question has plagued scientists for 100 years. Working with the interaction between oceans, atmosphere and land masses, scientists came up with a pretty good working theory for the prediction of Ice Ages that explained why glaciers got bigger, then smaller, over spans of millions of years. But to really apply this theory to the present-day climate on a scale that meant something to mankind, a more fine-tuned approach had to be employed. Scientists found what they were looking for on coral reefs.

As climates change the chemical nature of seawater changes. Because coral reefs are made up of the skeletons of millions of tiny critters that feed off ocean nutrients, the chemical signature of ancient seawater has been incorporated into the shells and skeletons that make up a coral reef. As a result, scientists can chemically analyze these remains for clues as to the chemical makeup of seawater over the years, which thereby opens the window of knowledge to past climates.

What's more, since living members of a reef need sunlight to survive, they always grow to within a few feet of the ocean's surface. Therefore, each layer of dead coral in



a reef represents former sea levels. Some reefs extend hundreds of feet to the ocean bottom. Using chemical analysis these layers can be dated and a sea level timeline created of the rising and falling sea. This time-line translates directly to the waxing and waning of Ice Ages, since the gathering or the melting of ice at the poles is what determines the rise and fall of Earth's sea levels.

This coral reef method of measurement has become so accurate that a precise curve can be calculated linking glacial

growth with sea level fluctuations down to the smallest change in climate. There are now climate profiles of mini Ice Ages that occurred during Interglacials and lasted only 100 to 1,000 years.

But this new science isn't without its problems. Unfortunately, all the curves from all the reefs around the world don't always match up, so it's still hard for climatologists to agree on what the future holds for Planet Earth. And there's always that possibility that we're still missing some major pieces of the climatic puzzle.

## Some Clues to the Causes of Ice Ages

Around the turn of the century, climatologists, observing the regularity of Ice Ages, looked to celestial events for a theory. What they found was that there are three constantly changing astronomical factors that influenced the amount of sunlight that penetrated Earth's atmosphere.

The most obvious factor was the change of the shape of Earth's orbit around the sun, from an exaggerated ellipse, where the distance between Earth and the sun varies by as much as 12 million miles, to a perfect circle. This change from ellipse to circle and back to ellipse takes 100,000 years.

When the orbit is a perfect circle the sun's energy falls on both hemispheres equally, regardless of the season. However, when the orbit is elliptical Earth receives more heat from the sun during the half of the year that it passes closest to the sun. Because the planet is tilted on its axis, during this warmer half-year period only one hemisphere is pointed toward the sun. This difference in heat intensity can make the difference between glaciers appearing or disappearing in a given hemisphere.

It seemed natural to these scientists that this 100,000 year astronomical

## An Ice Age or Hot Weather? Where're We Headed?

So where do we now stand in the climatic cycle? Since we're currently experiencing an Interglacial period, can we look forward to the approach of another Ice Age, or are we nearing the end of a 50-million-year Ice Era where we'll be standing on the threshold of another 150-million-year Nonglacial age like that enjoyed by the dinosaurs?

According to the cycle, we are overdue for another Ice Age. But there's another factor that may alter the natural progression of the cycle: the presence of a large amount of carbon dioxide in our atmosphere, very unusual for this stage of the climatic cycle.

The percentage of greenhouse gas carbon dioxide that exists in the atmosphere regulates how much heat escapes back into space, which in turn determines the temperatures within Earth's atmosphere. During Ice Ages the percentage of carbon dioxide in the atmosphere is very low. During a Nonglacial period the percentage is very high.

The question is: could the combination

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cycle corresponded to the 120,000 year Ice Age cycle. Furthermore, the times when Earth was in a circular orbit corresponded to the 10,000-year Inter-glacial period. As the orbit became more elliptical it triggered the next Ice Age.

But the cycles didn't match exactly. It became apparent that some other astronomical factors had to be incorporated into the theory, so two additional factors were explored.

The first was the 22,000-year wobble Earth makes as it spins on its axis. If the North Pole had a giant pencil extending up to the sky, over a 22,000-year period that pencil would scribe a complete circle in the heavens. The overall effect of this wobble is that every 11,000 years the hemisphere that's tilted toward the sun, when Earth makes its close pass, changes. This alternates which of the planet's hemispheres can form glaciers.

The second astronomical factor examined a 41,000-year change in Earth's angle of tilt on its axis. This angle is known to change by four or five degrees over the 41,000-year period, creating a high angle of tilt that increases the amount of light (heat) penetrating the atmosphere. As the angle decreases more light "skips" off the upper atmosphere reflecting back into space.

of the continuous, uncontrolled burning of fossil fuels (which sends carbon dioxide into the atmosphere) and the massive destruction of large expanses of rain forests and jungles (which filter carbon dioxide from the atmosphere) have allowed enough carbon dioxide to enter the atmosphere to ward off the natural occurrence of an ensuing Ice Age? Is our consumption of fossil fuels and irresponsible forestry practices steering us around the expected Ice Age and right into the next Nonglacial period?

Dinosaurs ruled the planet when the weather was warm, but when the climate changed so did the planet's rulers. The age of glaciers became the age of mammals, the age of man. Now cold-blooded reptiles, descendants of dinosaurs, are the animals that are hiding under rocks. As we pollute our oceans and our atmosphere, creating a greenhouse effect which could very well bring on the end of the present Ice Era, maybe we should keep this in mind.

Rick Baker studied marine geology at the Moss Landing Institute at Moss Landing, California, and holds degrees in chemical oceanography and geology.



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## Logbook: Dive Stories from our Readers

### A "Dry" Dive in the Catalina Hyperbaric Chamber

By Tiffani Woodworth, Irvine, California

**D**ivers seem to always be looking for that one unique dive. I recently found such a dive, which is hard to believe when you consider that it lacked what every other dive I had ever been on specialized in — water!

I took this waterless dive over at Catalina Island, in the hyperbaric chamber located on USC's marine lab grounds at Two Harbors. Accompanying me was NAUI College instructor trainer Matt Richards, his four instructor candidates, two open water graduates of mine and a fellow chamber junkie named James Janis.

After a 2½ hour boat ride from the mainland, we were greeted at the USC docks by chamber program manager Ron Ryan. Ron gave us a tour of the chamber, which reminded us very much of a scuba tank; only this tank could hold up to 6,000 cubic feet of air and 10 people.

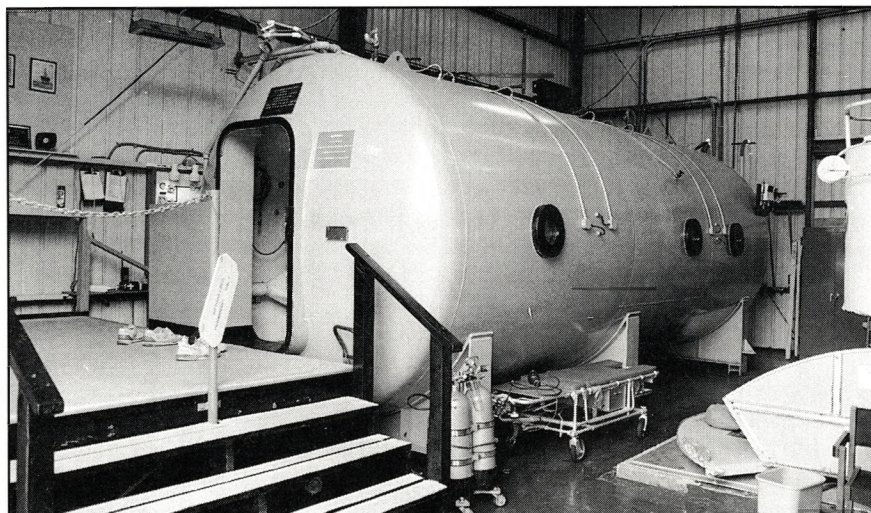
The tour over, we entered the outer lock of the chamber. With a hard push the heavy door sealed behind us. The game plan was to pressurize the outer lock to 165 feet, then step into the inner lock (which was waiting for us already pressurized to six atmospheres). Although this was my fourth training dive, it was my first ride in the chamber using this dual-lock method. (On previous chamber dives, we spent all our time in the main lock.) As it turned

out, this was to be a sort of training dive for the chamber crew too. They looked forward to simulating reacting to mechanical problems with the chamber.

The "okay" sign was given, and we were off. As with all other dives, we had to equalize our ears on the way down. It took 6½ minutes to get to 165 feet, and by the time we did so the inside of the chamber was 120 degrees and we were all sweating. We went through our exercises in the steamy heat but nobody was bothered too much because we were all enjoying our pressurized voices. The air at depth is extremely thick, and our vocal chords weren't made to vibrate at such a density. So we all sounded like a bunch of munchkins who had inhaled too much helium. And if that wasn't enough, we were narc'd out of our minds!

Since it would take 40 to 45 minutes and three decompression stops to return to the surface, we were able to stay on the bottom for only 12 minutes. On the way up our giggling fizzled out, because just as the chamber had heated up on the way down, it was cooling now that we were moving in the other direction. The chamber got to a nippy 40 degrees and the interior mist gave meaning to the saying "So foggy you could cut it with a knife."

Using the D.C.I.E.M. table profile of 170/15, our first decompression stop was at 30 feet. We stayed there for six minutes



*The Catalina hyperbaric chamber located at Two Harbors.*



then ascended to 20 feet for seven minutes. Our last stop was at 10 feet for 10 minutes, where we breathed 100 percent oxygen as a precautionary measure.

Just like that we were back on the surface, and the party was over. But we all stepped out of the chamber with a better idea of what it would be like during a real decompression emergency. The ride for us was fun, but we realized there was nothing amusing about a chamber ride to chamber technicians or to patients who find themselves in a real life-threatening situation.

The Catalina hyperbaric chamber is a critically important facility to sport divers. In addition to saving lives, it offers courses on how to manage field accidents and how to be a member of the volunteer chamber crew. It's also an excellent training aid for rescue and deep diving classes. For more



*NAUI instructor Tiffani Woodworth.*

information on the Catalina hyperbaric chamber, the courses that are offered or how to get involved in chamber training dives, contact Ron Ryan at the Catalina Hyperbaric Chamber, P.O. Box 398, Avalon, CA 90704; (213) 743-6793. ☐

*Do you have something in your logbook that you'd like to share with other divers? If so, send it to LOGBOOK, c/o PACIFIC DIVER, P.O. Box 6218, Huntington Beach, CA 92615. A self-addressed, stamped envelope must be included to ensure the return of any photographs. A \$25 award will be given for any stories selected for publication.*

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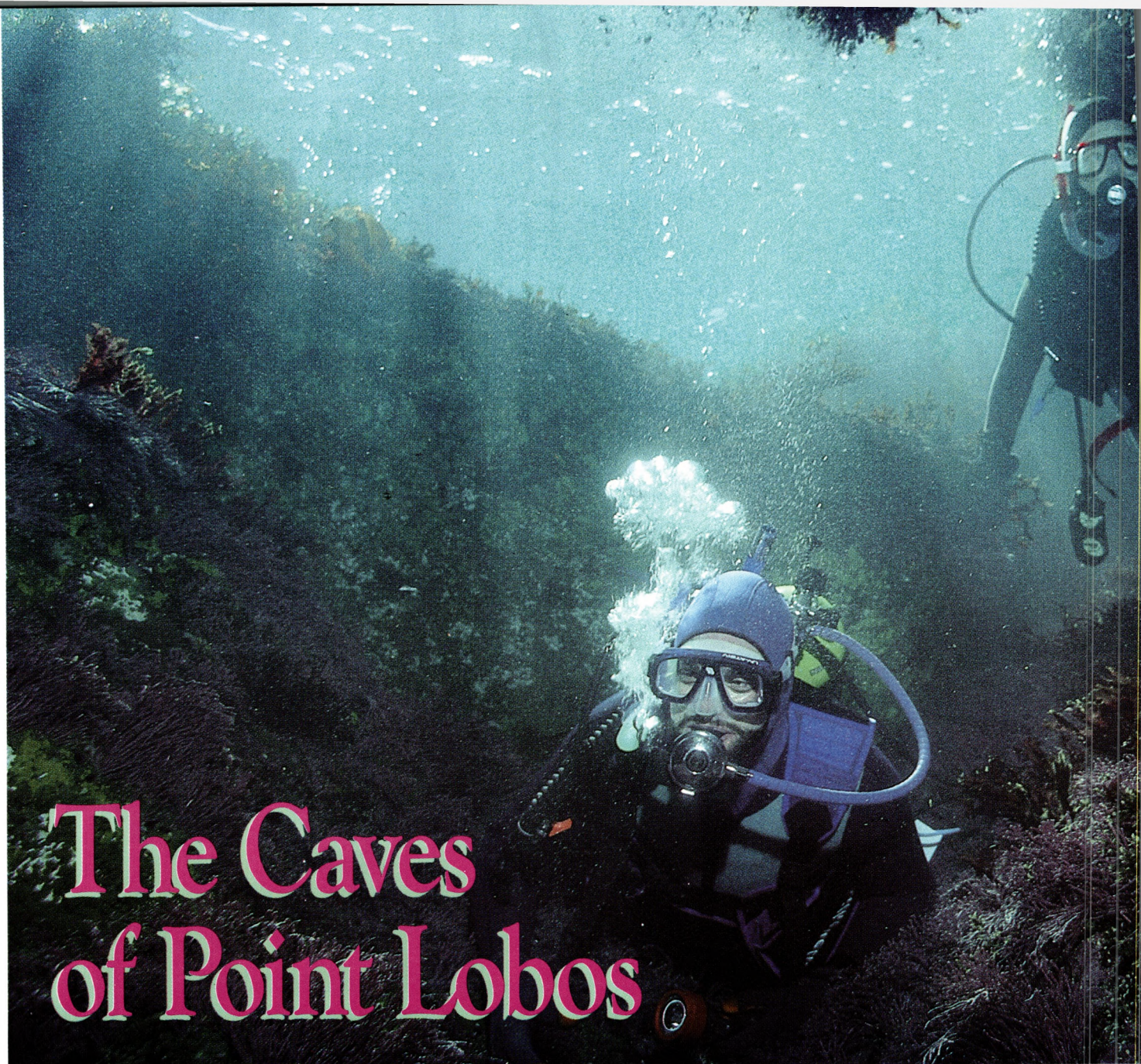
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# The Caves of Point Lobos

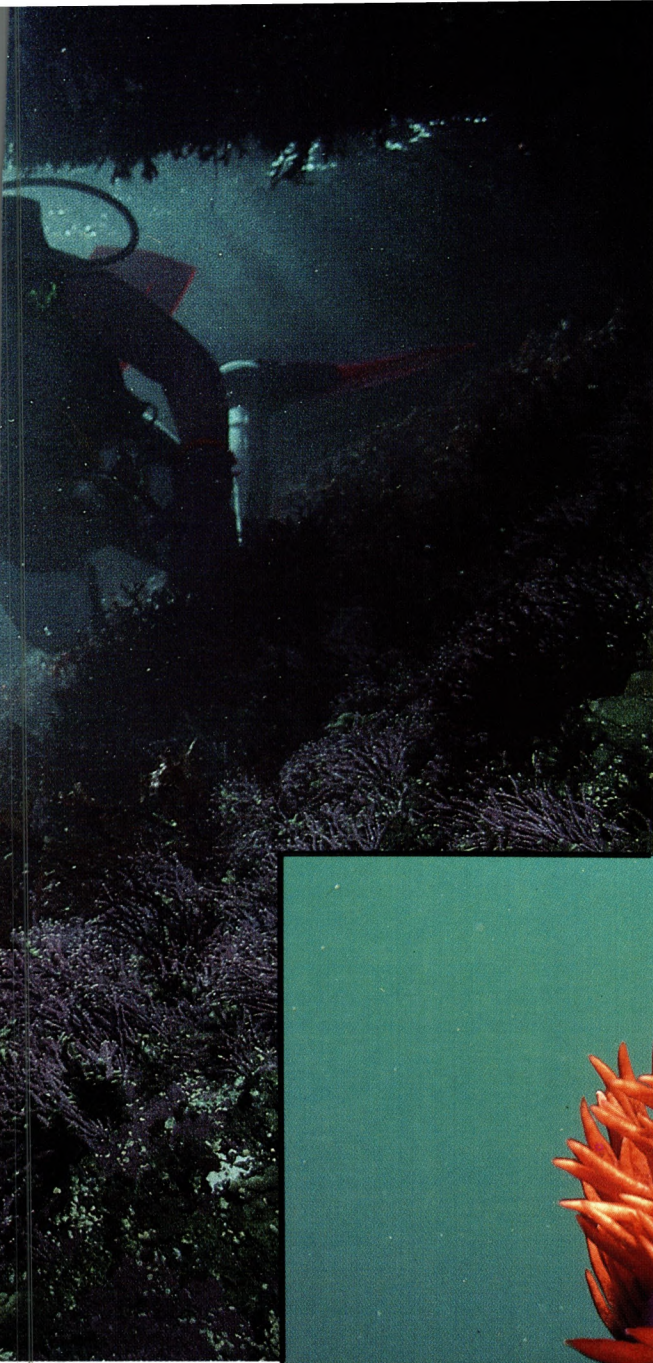
*Caverns and tunnels, lots of leopard sharks and playful harbor seals prove there's more to this underwater park than first meets the eye.*

Few underwater attractions stir divers' imaginations as much as underwater caves. These patches of darkness seem to trigger some innate need of ours to discover what lies around the next corner. Like the sirens of ancient Greece they beckon, inviting us to enter their mouths and explore their winding passageways.

Along the Northern California coast there are many submerged caves. Unfortunately, few of them can be safely explored. However, at Point Lobos State Reserve, located about four miles south of Carmel on Highway 1, there are two small caves that can be penetrated with relative safety by properly trained divers.

Article and photos by Bruce Watkins





*A buddy team enters the west entrance of the cave at Coal Chute Point.*



### THE LARGEST CAVE AT WHALERS COVE

The larger of Point Lobos' two caves can be found in shallow water in Whalers Cove. The cave cuts through Coal Chute Point and is roughly the shape of a three-sided pyramid, with both base points acting as entrances.

The smaller entrance is located on the Whalers Cove side about 25 yards from the tip of Coal Chute Point, just at (or just below, depending upon the height of the tide) the surface. This entrance is about seven feet wide and two to three feet high.

Entering from this side, the cave immediately drops 10 feet, veers right and then opens up into the main chamber. Continue through the cave toward the larger entrance and the chamber widens. The larger entrance, which exits into a small inlet adjacent to Whalers Cove called The Pit, is about 40 feet wide and sits in about 30 feet of water.

The cave has no side tunnels. It runs about 80 feet from entrance to entrance with only one mild bend. It's the structure of the cave itself that's



*Stunning Spanish shawls are commonly found among the kelp fronds just outside the cave at Whaler's Cove.*

the main attraction; the walls have some encrusting sponges and red and yellow tunicates, but otherwise marine life is much more abundant outside the cave.

As soon as you enter the cave shine your light toward the other end. Most of the time you'll discover three or more harbor seals (*Phoca vitulina*) hunting or just playing around in the darkness. Working in groups, the seals apparently herd schools of blue rockfish or other species into the cave where they take advantage of the dark and restricted environment to effortlessly feed on the confused fish.

When not fooling around inside the cave the seals haul out on wash rocks



## Point Lobos Dive Facts

**HOW TO GET THERE:** From the San Francisco Bay area take highway 101 south, turn west onto Highway 156, and proceed south at the intersection of Highway 1. The park entrance is about four miles south of Carmel on Highway 1.

**GENERAL CONDITIONS:** Very calm within Whalers Cove; highly variable outside of Whalers Cove and in Bluefish Cove. Water temperature varies between 48 and 55 degrees. Visibility inside Whalers Cove varies between 15 and 30 feet, and Bluefish Cove normally has visibility of 30 to 40 feet, although it has been known to get up to 80 to 100 feet in the winter.

**ACCOMMODATIONS:** There are restrooms and picnic tables at the Whalers Cove parking lot along with a launching ramp for dive boards and inflatable boats. Freshwater hoses are usually available; however, because of the drought they are currently *not* available.

**SPECIAL RULES:** Divers may only enter the water at Whalers Cove via the concrete launching ramp, and diving is permitted within Whalers and Bluefish coves only. The reserve limits the daily number of divers to 15 teams of two or three divers. Diving reservations can be made through MISTIC as many as 28 days ahead of time — call (800) 444-7275. The reservation fee is \$6 and is not transferable; the person who made the reservation must be present when the buddy team checks in. The rangers will check to make sure that you have a C-card. The entry fee is \$5 per car.

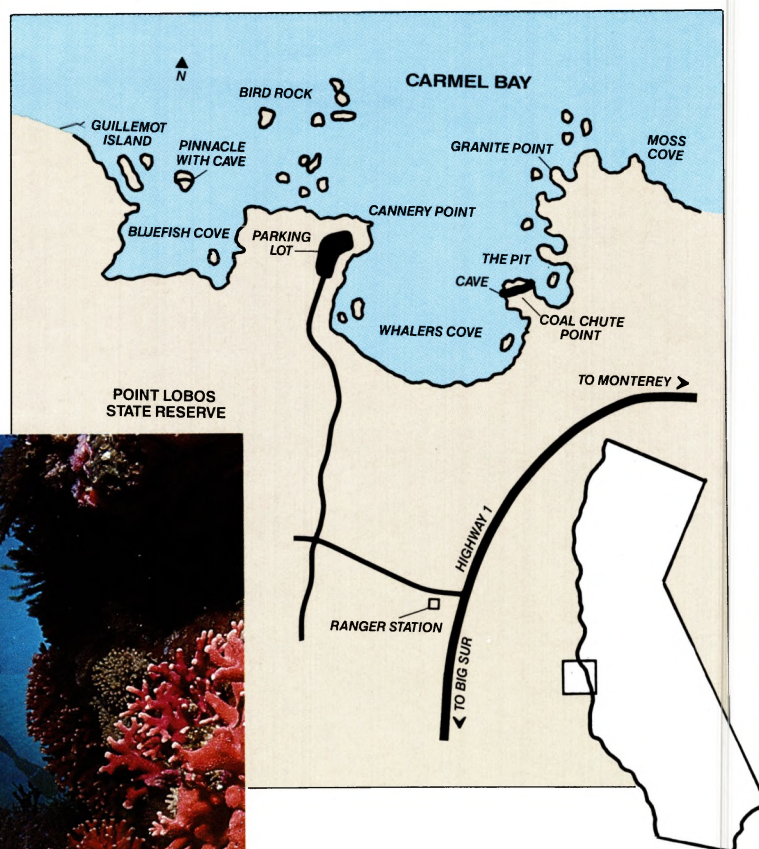
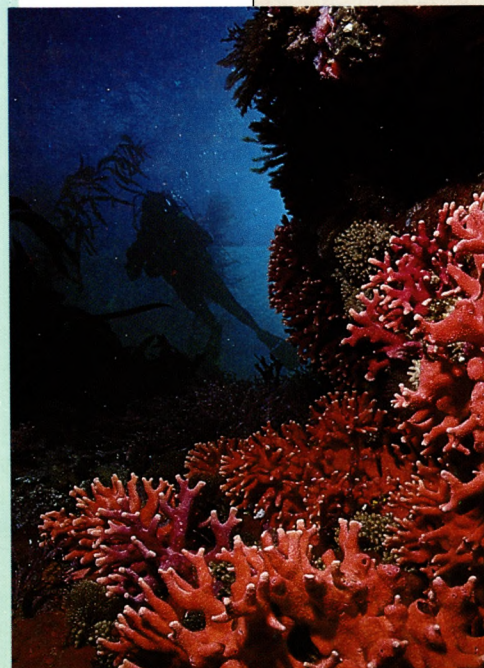
Point Lobos is a reserve. No natural objects may be collected, removed or disturbed. This includes rocks, shells, animals and plants.

**LOCAL DIVE SHOPS:** Aquarius Dive Shop, located at 2240 Del Monte Blvd., Monterey, (408) 375-1933; and 32 Cannery Row (at the Breakwater), Monterey, (408) 375-6605. Open seven days: Mon.-Fri. 9-6, Sat. and Sun. 7-6. The Cannery Row shop is closed on Tuesdays and Wednesdays.

Bamboo Reef Dive Shop, located at 614 Lighthouse Ave., Monterey, (408) 372-1685. Open seven days: Mon.-Fri. 9-6, Sat 8-7 and Sun. 7-6.

**WEATHER/WATER REPORT:** (408) 642-4909.

*Diver explores the hydrogarden near the entrance to the cave in Bluefish Cove.*



over in The Pit. February through May is the pupping season and The Pit (along with nearby Moss Cove) is an excellent place to observe newborn seals as they adjust to their strange new world.

While mothers with pups generally won't approach divers, on occasion they will choose to include a diver in their game-playing. This is especially true after the pups are about four months old.

Remember, it's both foolish and illegal to chase or harass these marine mammals. The most rewarding experiences and photographs are usually had when the animals choose to approach you instead of the other way around.

Swimming across Whalers Cove on your way to the cave you may be lucky enough to observe another interesting animal. Leopard sharks (*Triakis semifasciata*) often show up in the cove at about the same time the harbor seals are pupping. These otherwise solitary sharks congregate in shallow bays and estuaries in the late winter and early spring to give birth to their young. As many as 50 three- to six-foot leopard sharks may be seen

gathering in the deeper water just off Point Lobos where they each deliver up to a dozen four- to six-inch offspring.

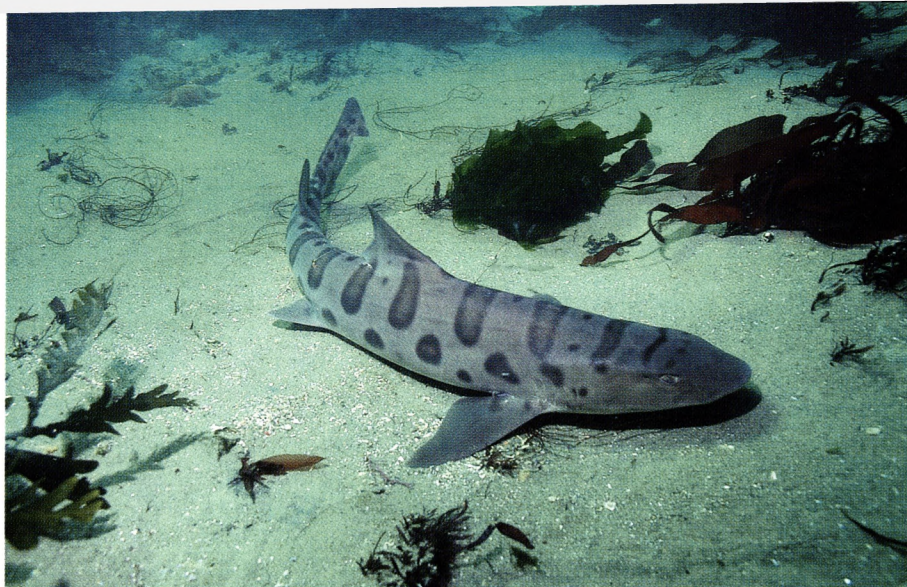
Unfortunately, harbor seals don't feel leopard sharks make good neighbors, and they expend a great deal of energy trying to drive them from Whalers Cove. The bubble-blowing seals furiously dive-bomb the sharks as they rest on the sand bottom. If all the noise and commotion don't convince the sharks to move on to more peaceful surroundings, the seals will actually sneak up from behind and bite the sharks on the tail, then chase them out of the cove.

While leopard sharks may be a threat to harbor seal pups (or perhaps the other way around), these docile creatures should cause little concern to divers. In fact, it's extremely difficult to even approach leopard sharks while on scuba. Exhalation bubbles tend to scare the sharks off; however, it's easy for free divers to get within a foot or so when the sharks are resting on the bottom.

### THE PINNACLE TUNNEL AT BLUEFISH COVE

Point Lobos' other cave can be found over in Bluefish Cove. It runs through a pinnacle located not far from Guillemot Island. The pinnacle rises from an 80-foot bottom; the tunnel-like cave runs straight through the pinnacle from east to west in about 50 feet of water. Approximately six feet high at its widest point, the cave is just big enough for one diver to pass through





*Leopard sharks often show up near the Point Lobos caves to give birth to their young.*

comfortably. As with the cave in Whalers Cove, this one has no side tunnels, it is generally free of obstructions, and at least one entrance is always visible.

Unlike the Whalers Cove cave, this pinnacle tunnel is somewhat difficult to find, simply because the pinnacle itself is not easy to locate. In the spring and summer look for a small kelp bed marking the spot, but in the winter chances are you're going to need a depthfinder. And since there are several pinnacles in the area, once your depthfinder locks onto a pinnacle, you can never be sure you have the right one until you don your gear and go down and check it out.

The pinnacles of Bluefish Cove are among the most beautiful in all of California. Large trees of pink and purple hydrocoral (*Allopora californica*) cover many of the walls and huge rose anemones (*Telia crassicornis* and *lofotensis*) and strawberry anemones (*Corynactus californica*) cover the rocks, bathing the terrain in deep reds and lavenders. Bat rays (*Myliobatis californica*) and sea lions cruise through the kelp beds, and at least 50 of the 130 or so species of nudibranchs inhabiting California waters can be found here. The pinnacle cave aside, Bluefish Cove is an awesome dive that overwhelms the senses in terms of color and detail.

#### **DON'T FORGET TO LOOK AROUND TOPSIDE**

While the caves of Point Lobos are interesting, don't overlook the rest of the park, both above and below the water. Although the California Department of Parks and Recreation attempts to make the park look like no human activity has ever occurred here, Point Lobos has in fact enjoyed a diverse history. Once the site of a stone quarry, a logging camp, a whaling port, a coal mine and an abalone cannery, it was recognized that this stretch of coastline was very special and needed protection from recreational overuse and commercial exploitation, so in 1933 it was incorporated into the state park system. Then in 1960 Point Lobos was designated as our nation's first underwater reserve.

So come to Point Lobos to explore the caves and experience the splendor of nature at its best. You'll go away with an increased awareness of our magnificent underwater world and the comforting knowledge that this little piece of the California coast is being well looked after for the generations to come. □

*Bruce Watkins is a free-lance writer and photographer based in Northern California. He is currently a senior biomedical scientist at the University of California, Livermore.*



*The east entrance to the Whaler's Cove cave is very large and sits in about 30 feet of water.*

#### **Safety First!**

All national and international certification agencies recommend that divers receive specialized training before attempting to penetrate any cavern or cave. Most local California dive shops offer such courses.

Cave divers usually use the "Thirds Rule": one-third of your air supply is for entering the cave, one-third is for exiting, and one-third is kept in reserve for emergencies. Emergencies may include entanglement in fishing line or in your own safety line, having to negotiate a restricted passageway, navigating in a "silt out" or dealing with equipment failures. A safe second and buddy skills are also required, and at least three dive lights per person are recommended.

Many serious cave divers have dual tanks with two regulators that may draw independently from either tank. A contiguous guideline showing the way out of a cave in the event of a "silt out" or light failure is also required by certification agencies.

However, by NAUI standards the "caves" at Point Lobos are actually classified as "caverns" because they are in shallow water, they have a short penetration distance and enjoy generally good visibility. The caves have little in the way of silt to get stirred up, and since Point Lobos is a marine reserve you are unlikely to encounter fishing line or other entanglements. What's more, there are no side tunnels to get lost in and since daylight can be seen from both entrances, many cave divers feel redundancy in air supplies and dive lights as well as safety lines are not really necessary here, although during the spring and summer months when the plankton blooms reduce visibility to 10 feet or less, a safety line is necessary for a safe penetration.

However, this doesn't mean that precautions shouldn't be taken. In particular, buddy teams must be proficient in rescue skills, particularly in dealing with out-of-air situations, before entering these or any other caves. And there are other hazards to be aware of. For example, the cave entrance on the Whalers Cove side of Coal Chute Point is at the surf line. If the surf is up, this can be a dangerous spot. What's more, the entrance is somewhat restricted because of its narrow mouth. If you're new to cave diving or if the surf is high you probably will want to enter the cave from The Pit side.





## Sipadan Island, Malaysia

# Progress Comes to Paradise

Article and photos by Eric Hanauer  
32 PACIFIC DIVER JANUARY/FEBRUARY 1991

*Los Angeles International Airport  
— June 8*

Waiting for my flight in the Malaysian Air System departure lounge, I noticed a couple of passengers wearing diving T-shirts and went over to strike up a conversation.

"Where're you headed?" I asked.

"We're going to Sipadan Island," one of them replied.

"Why Sipadan?"

"Because we read about it in a dive magazine."

That, of course, delighted me, because I was the one who wrote the article. I had been to Sipadan the previous year, and was returning now under the auspices of the Malaysian Tourist Office.

My return trip was not without some trepidation, though. After all, word was obviously out about Sipadan. And I wondered; would it still be as beautiful, as primitive, as unspoiled as I remembered it? By writing about a place I love, had I inadvertently sowed the seeds for its destruction?

I'm talking here about a tiny island off the coast of Borneo that you could walk around in about 20 minutes. A fringing reef, twice the area of the island, surrounds it. Sitting in my plastic airport chair I remembered Sipadan's breathtaking diversity of marine life. Sheer reef walls, often undercut, decorated with colorful soft corals and a plethora of reef fish. But it was the turtles that made the island's waters truly unique. The entire green turtle life cycle was on display at Sipadan.

Two years ago the accommodations on Sipadan consisted of nothing more than tents. Last year, a few primitive huts had been built by Ron Holland, co-owner of Borneo Divers, who has worked diligently toward making his dream of a Robinson Crusoe island a reality. Today, there's talk about more construction, more visitors, and government regulation. Suddenly I felt reluctant to return to this tropical paradise. What if all this "progress" had stolen its magic?



Directly off the beach  
from the divers' huts  
there's a wall that  
drops off to 2,000 feet.



Soft corals adorn the overhangs at Hanging Gardens.

### *Somewhere over the Pacific ~ June 9*

It just isn't fair. I had planned on sleeping away the plane trip, but the in-flight double feature included *Indiana Jones' Last Crusade* and *The Abyss*. Now I've got a bad case of red-eye.

Four members of the diving group on board were commercial pilots, so they arranged an invitation for us to tour the cockpit of the 747-400 jumbo jet. The jetliner's control panel looked like an arcade gone wild, with four large screens showing multi-colored radar displays, instrument readings and other gadgets and gizmos I couldn't begin to comprehend. The diving pilots sat around talking shop with the Malaysian Air pilots, who in turn asked us as many questions about diving as we asked about 747s.

### *Sipadan Island ~ June 11*

Getting here is half the fun. Los Angeles to Honolulu to Kuala Lumpur, Malaysia, then over to Borneo. After an overnight hotel stay in Kota Kinabalu, it's a short flight to Tawau, a two-hour bus ride to the coastal town of Semporna, then a two-hour boat ride over to Sipadan. Despite the jet lag, members of our dive group were entranced by the green coastal water that turned a sparkling blue as we cruised out beyond the continental shelf. In the distance, the small jungle island drew nearer. It was early afternoon by the time we reached the sandy shores of Sipadan. And it was time to get wet.

As our group returned from the first dive, I kept quiet and wandered along the fringes of conversation, listening to the comments. Most of the divers were raving about the fish and invertebrate life they had seen, but Jim Black, the nominal leader of the group, wasn't impressed. And frankly, neither was I. Visibility was poor by Indo-Pacific standards, with lots of sand and silt raining down from the overhangs. Well, perhaps I had been expecting too much. Or perhaps it's true that you can't go home again. Feeling somewhat responsible (remember, it was my name on that article that had lured all these people here), I was hoping that Sipadan's magic was indeed still alive, and that it would eventually weave its spell on me, on all of us.

### *Sipadan Island ~ June 11*

It took only as long as the first night dive for the magic to touch Jim Black, who surfaced raving about the sleeping bump-head parrotfish he had seen, a 200-pound giant. Oh yeah, then there were the flashlight fish, those bioluminescent pouches beneath their eyes looking like miniature automobile headlights. There were also lots of nudibranchs, nocturnal crabs, sleeping puffers and wide-awake conger eels.

Unfortunately, my excitement was somewhat dampened by the fact that neither of my main strobes were working. I went right to work cannibalizing them, attempting to put together at least one that would function. I'd been on the island for a day and a half so far and had been plagued with nit-picking photo equipment problems the whole time. I felt like Ryne Sandberg in a batting slump.

Such problems had a lot to do with the bad attitude I was feeling toward Sipadan. Then again, maybe it was because last year I hadn't been expecting much and was overwhelmed. Or maybe it was because this time I had anticipated too much, and it turned out that I wasn't seeing anything new. Also, on this trip there were 20 divers; last year when I was here there were only 10. And things had become a bit more regimented, but then perhaps that's because low-key Ron Holland was over on the mainland.

On the other hand, creature comforts have certainly improved. The lodge has been expanded and now includes a bar, although the carpeting is still beach sand. The number of showers and toilets has quadrupled (four of each). Additional huts have been built, including an office for the dive guides and a longhouse for the crew. Now there is even a separate dive locker that includes a charging station for strobes, lights and other electronic toys. Outlets are provided for both 110 and 220 volts and the generator runs 12 hours a day. But at this point, with my hands full of strobe components, I was concerned only with my own problems. I couldn't have been more unhappy if they had sprayed the jungle with Agent Orange and built condos.

*Continued*



## Sipadan Island June 12

What a difference a functioning strobe makes! I've had three great photo dives, with turtles coming in virtually too close for the lens. There are two firm rules here on Sipadan: no one rides a turtle, and no one feeds any fish. Ron Holland laid down these laws in an attempt to maintain the island's marine life in as natural a state as possible. And it seems to be working, because I'm seeing more turtles than I did last year, and they are allowing us to get a lot closer. On a couple of these encounters I reached out and was able to gently stroke their shells.

I've been looking harder and I'm beginning to see a few new creatures, and the familiar tunicates and soft corals, the tiny clownfish and basslets, the schooling barracudas, the giant puffers and batfish are all like old friends. My camera and strobe seem like an extension of my brain and hand; I know these pictures are going to be good. It's just like Ryne Sandberg on a hitting streak.

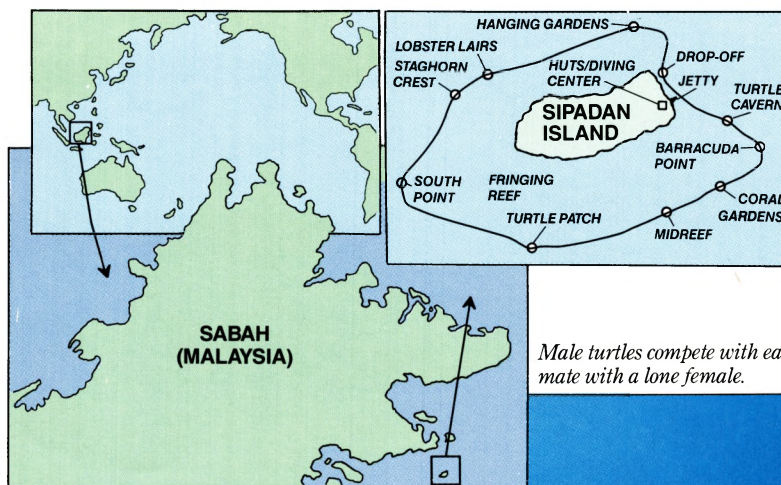
Back in the lodge after a day of good diving, I sat and listened to the conversation. Sid Clark, a check pilot for US Air, waxed poetic about Sipadan's undersea life. We all seem to have regained a childlike sense of wonder over the exotic marine life. And now topside, it's obvious that the island's spell has affected us. We've become tuned to the sea, the beach and the jungle around us, and the pace has slowed down to an easy flow. Swimsuits are the uniform of the day. In the evening we throw on a T-shirt to go to dinner. I keep wondering why I packed so many clothes.

## Sipadan Island June 14

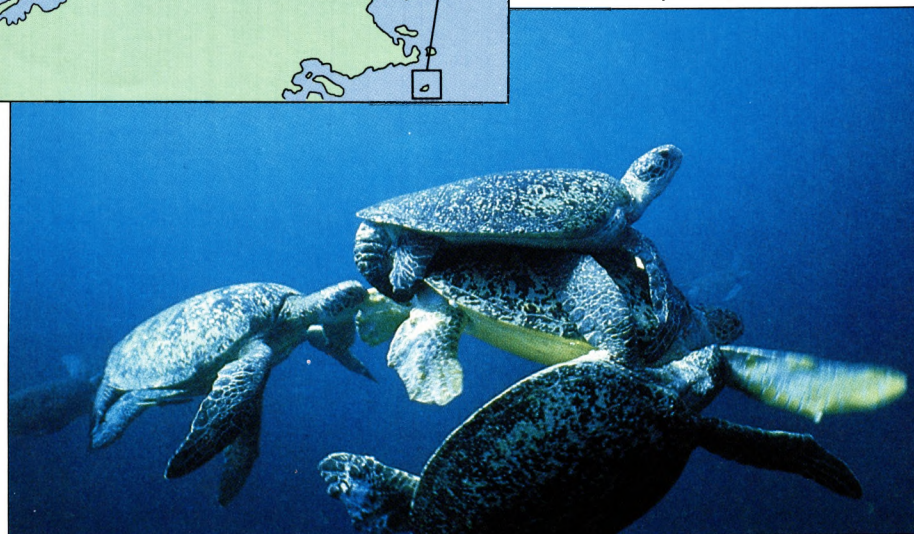
I just had one of those unforgettable diving experiences that define a trip, and make traveling halfway around the world worthwhile. Rarely do any of us get a second chance to experience a natural phenomenon, but it just happened to me. I had experienced it last year too, but this time it was even better.

On my last trip, a pair of mating turtles were spotted about 100 yards off the beach. Grabbing my Nikonos and free diving gear, I sprinted for the water, hoping the turtles would still be there. As it turned out, not only did they wait for me, but a third climbed aboard for an impromptu underwater *menage a trois*. And I got it all on film.

At least I thought I did. There was one excellent shot of the three turtles head on that has been published several times. However, the rest were unusable, owing mainly to poor exposure. Despite the



*Male turtles compete with each other to mate with a lone female.*



satisfaction of getting the one good shot, I was really perturbed by what might have been.

Now, one year later almost to the day, it happened all over again. We were relaxing in the lodge when Neil Antrum, a dive guide, spotted a mating pair about 100 yards offshore. There were two other divers close by, and I asked them to give me a two-minute head start in case the sight of three charging divers spooked the animals. They agreed, then immediately broke for the water.

One hundred yards offshore, we spotted five turtles below us. My two swimming partners stopped, but realizing that the mating pair wasn't among this group, I kept on kicking. Following a virtual trail of turtles, I finally spotted them. The male was riding the female, his front flippers hooked over the top of her carapace. A third turtle tried to climb aboard. Then a fourth, in an apparent fit of jealousy, bit the rear flipper of the intruder. I gasped as pieces of flesh spewed out.

At the time, I had no idea how many turtles were in the aggregation. It was just a jumble of bodies as the amorous males gave chase, then pulled one another off when it seemed a rival was about to join in. Later, when I got a chance to review the slides I discovered that at one point there were seven animals in one frame.

Unless disturbed, a mating pair will

usually copulate for hours (this is why turtle eggs are highly regarded as aphrodisiacs in the Orient). Initially, the group I was watching remained underwater for about five minutes at 20 feet. I repeatedly dived, checked my light meter, then shot three to five frames before running out of breath and surfacing. Eventually the heavy breathing took its toll on the turtles as well, because they began to surface about every two minutes. Scarcely able to believe my good fortune, I quickly burned the roll of 36 exposures. Only then did I look around. I was over a quarter-mile offshore, and my two friends were nowhere to be seen. But I didn't care. I was floating on clouds. I figured that at least 20 of these shots had to have been better than my best shot of the previous year. In the words of the Teenage Mutant Ninja Turtles, "Cowabunga!"

## Sipadan Island June 14

Turtle Tomb. This underwater cave is a somewhat restricted area now, owing to liability scares and to the fragile state of the turtle shells inside. This was the highlight of Cousteau's recent television show on Sipadan. His team made the cave seem deeper and longer than it really is, but that's show biz, I guess.

I did chuckle, however, over Cousteau's assertion that they had found the cave by "following a turtle." Actually, that turtle



was about six feet, four inches tall, weighed 250 pounds and called himself Ron Holland.

No one goes into Turtle Tomb these days without a guide, so Samson Shak and his sister, Adeline, accompanied me. Samson, a Malaysian with a biology degree, is a partner in Borneo Divers. Adeline is Borneo's first female dive master.

We reached the entrance to the cave and squeezed through the narrow crevice at about 25 feet, turning sideways as our tanks scraped the rocks. Abruptly the passage opened into a huge, dark chamber. With only the light of our torches piercing the darkness, we followed the guide lines that Ron had set across the ceiling. This led us to Rhino Rock, so named because it resembles a rhinoceros profile. Directly behind the "horn" lies an intact turtle skeleton, the skull pointing upward. Continuing to follow the lines, we came upon 19 turtle skeletons. Some people say the cave is a secret burial place for turtles. More likely, the turtles entered seeking food or rest, couldn't find their way out, and eventually drowned.

I had shot all the pictures I needed of Turtle Tomb last year, but figured that no visit to Sipadan was complete without a dive into this breathtaking cave. The crystal-clear water, being suspended in total darkness, the barren rock walls and the skeletons make Turtle Tomb an extra-special dive.

#### Hyatt Kinabalu June 17

It's great to sleep in a non-sandy bed, and to take a hot shower. But I miss Sipadan all the same, and would have remained a few more days had my itinerary allowed.

As it turns out, the government is planning to make Sipadan a national park. This will protect the turtles and stop further development. Inevitably, along with this protection will come a few restrictions on tourist numbers, and less freedom to move around the island when the turtles are nesting. But if that's the price we have to pay for preserving this island paradise, then I'm for it.

#### Epilogue

After leaving Sipadan, the adventure continued. Returning to Borneo, I climbed Mount Kinabalu, at 13,000 feet the tallest mountain in Southeast Asia. (That's not really such a significant feat, considering that about 50 people do it daily.)

On the first day, we climbed from park headquarters at 6,000 feet to the Panar Laban resthouse at 11,000 feet. The next morning at 3 a.m. we began our climb to the summit, arriving in time to watch the sun rise. The reason for the early hour is more than just masochism. By late morn-

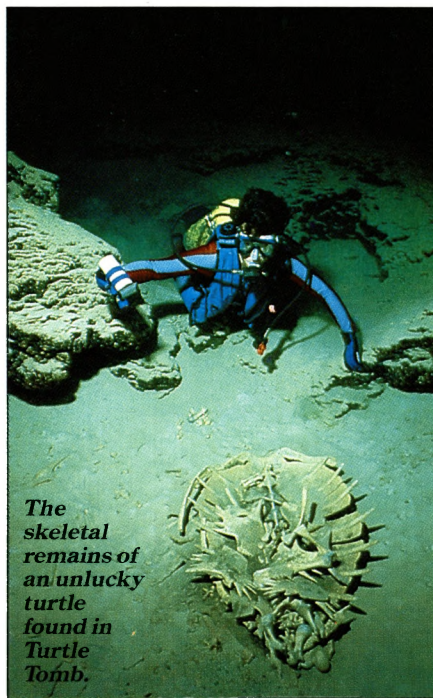
ing the summit is shrouded in clouds, so if you want to see anything, you have to start early.

The mountain has few switchbacks; the trail goes virtually straight up and down. You go up on your heart and lungs, then come down on your quadriceps. For the next five days, my legs felt about 100 years old. If you are planning on a climb, definitely do it *after* diving.

Malaysia offers a wealth of activities to pursue once you leave the water. On my first visit, I took a jungle river trip in Sarawak to the oldest rain forest on the planet, then I explored the magnificent Mulu Caves. I also visited the orangutan sanctuary at Sepilok, where orphaned animals are rehabilitated for life in the wild. Few animals are as huggable as juvenile orangutans.

The cultural mix in Malaysia includes native Malays, Chinese, Indians and indigenous tribes such as the Murut, Penan and Bejau. Because it was once a British colony, English is spoken nearly everywhere. From shopping and dining in the upscale, high tech, capital city of Kuala Lumpur to visiting native longhouses in the jungles of Borneo (where they used to hunt heads), from white-water rafting in remote rain forests to relaxing in a cool mountain resort, this country offers something for virtually every interest. And yeah, I guess I've discovered that I can, in fact, go home again. Or at least I can go back to Sipadan. □

*Eric Hanauer is an associate professor of physical education at California State University, Fullerton, and a longtime NAUI instructor. He is the author of The Egyptian Red Sea: A Diver's Guide.*



*The skeletal remains of an unlucky turtle found in Turtle Tomb.*

## General Information

\*Sipadan is an 86-acre island located in the Celebes Sea about 10 miles from the coast of Borneo. The island has a population of 11.

\*The primary language spoken on the island is English; the secondary language is Filipino/Bajah.

\*A passport and visa are the required entry documents for U.S. citizens.

\*Electrical Current: Malaysia — 220 volts, 50 cycles with European plugs. On Sipadan — 110-volt power with American plugs is also available.

\*The Malaysian Air System is the airline serving Borneo.

### Weather

\*Tropical, humid.

\*Seasons: Winter — November through February. Air temperatures average 82 degrees, water temperatures average 80 degrees. Wind speed averages 10 knots. Winter is the rainy season with an annual rainfall of about 100 inches. Summer — March through October. Air temperatures average 95 degrees, water temperatures average 82 degrees. Wind speed averages three to four knots.

### Diving

\*Best Times to Dive: March through October.

\*Visibility: Winter — 100 feet; summer — 80 feet.

\*Recommended exposure suit for year-round diving: 1/8-inch wetsuit or a dive skin.

\*Sipadan offers wall diving and night diving but no wreck diving, spearfishing or shell collecting. The three most popular dive sites are Barracuda Point at 10 to 120 feet, Hanging Gardens at 10 to 120 feet, and Drop-off at 20 to 130 feet.

\*Nearest recompression chamber: Labuan, Malaysia.

### Costs

\*Figure on \$100 a day for accommodations, meals and two tanks a day.

\*Average air fare from Los Angeles (includes Borneo): \$1,000.

\*Departure tax: \$6.

\*Currency exchange rate: Malaysian ringitt = \$.40 U.S.

### For more Information

Tropical Adventures Travel, 111 2nd N., Seattle, WA 98109; (800) 247-3483, FAX (206) 441-5431.

Creative Adventure Club, 3007 Royce Lane, Costa Mesa, CA 92626; (800) 675-8543 CA; (800) 544-5088 national.

The Malaysia Tourist Information Center, 818 W. 7th St., Los Angeles, CA 90017; (213) 689-9702.



Why do we enjoy being near the ocean? Perhaps for the same reasons we hang pictures of fish or past diving expeditions on the walls of our homes and offices. We think of the ocean as a pure, unspoiled, restlessly natural place; a refuge of calm in an increasingly complex, noisy, odorous, dangerous existence; a breath of crisp air, a school of fish near our masks, a symbol of more natural times. To us, it is sunsets and fog, waves to ride and cold clean spray in our faces. We love the ocean's freedom and strength, its feel on our skin, its changing moods.

How, then, can we explain our treatment of this revered place? We take solace from the ocean, but we rarely consider the effects of our behavior on the ocean and atmosphere. We don't think twice about driving our cars or powering our industries with fossil fuels, yet their burning has caused the carbon dioxide content of the atmosphere to increase rapidly, which may be raising Earth's surface temperature. Some of us pour used crankcase oil into sewers, grumble at the inconvenience of pollution controls on gas pumps or automobile engines, think recycling aluminum cans or plastic is just too much trouble, and vote against bond issues for sewage treatment plants, mass transit and slow-growth initiatives. We willingly visit the ocean for recreation, relaxation and spiritual renewal, yet by our actions or by our neglect we are helping to damage or destroy it.

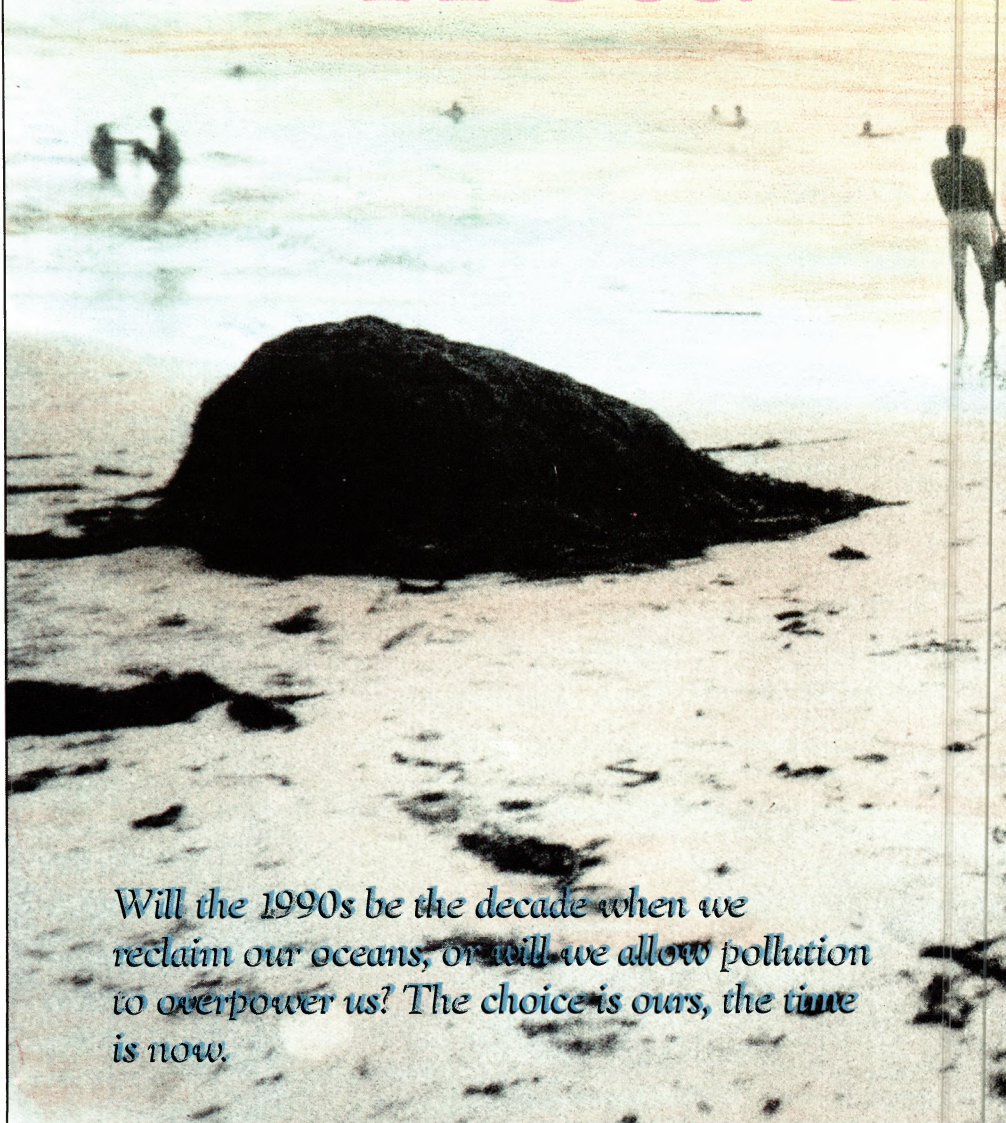
#### MARINE DUMPING GROUND

We've long polluted the sea with our wastes. The ocean's great volume and relentless motion dissipate and distribute natural and synthetic substances, but its ability to absorb is not inexhaustible. No one knows to what extent we have contaminated the ocean — by the time the first oceanographers began widespread testing, the Industrial Revolution was well under way and changes had already occurred. Traces of synthetic compounds have now found their way into every oceanic corner. It's sad to consider that we will never know what the natural ocean was like, or what remarkable plants and animals may have vanished as a result of human activity. Our limited knowledge of pristine conditions is gleaned from small seawater samples recovered from deep

within the polar ice pack, and from tiny air bubbles trapped in glaciers. There are few undisturbed habitats left to study, and few marine organisms are completely free of the effects of ocean pollutants.

The ways in which pollutants are changing the ocean and the atmosphere, even the *direction* in which some of the changes are moving, is often difficult for researchers to determine. Environmental impact cannot always be predicted. As a result, marine scientists vary widely in their opinions about what pollutants are doing to the ocean and what to do about it. Environmental issues are frequently emotional, and media reports tend to sensationalize short-term incidents (like oil spills) rather than more serious long-term problems (like the effects of long-lived synthetic organic chemicals).

# A Sea of



*Will the 1990s be the decade when we reclaim our oceans, or will we allow pollution to overpower us? The choice is ours, the time is now.*

#### OIL POLLUTION

Oil is a natural part of the marine environment. Oil seeps have been leaking large quantities of oil into the sea for millions of years. The amount of oil entering the ocean has increased greatly in recent years, however, because of our growing dependence on marine transportation for petroleum products, offshore drilling, near-shore refining and street runoff carrying waste oil from automobiles.

In the late 1980s people were using nearly 5.5 billion tons of crude oil each year, about half of which was transported to market in large tankers. In 1985 about 3.5 million tons of oil entered the world's oceans. Natural seeps accounted for only about eight percent of this input, about a quarter of a million tons. Some 45 percent



# Wastes

LUAN LA PERNA

look terrible and generate great media attention, most forms of marine life in an area recover from the effects of a moderate spill within about five years.

Spills of *refined* oil, especially near shore where marine life is abundant, can be more disruptive over longer spans of time. The refining process removes the heavier components of crude oil and concentrates the lighter, more biologically active ones. Components added to oil during the refining process also make it more deadly. A 1969 spill of refined oil at West Falmouth, Massachusetts, killed countless marine organisms and caused grave environ-

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Above: this plastic six-pack ring has an estimated life span of 450 years.

of the total was associated with marine transportation. Most of this oil — 32 percent — was not spilled in well-publicized tanker accidents but was released intentionally, quietly, routinely, and with little fanfare during the loading, discharging and flushing of tanker ships. This oil is particularly harmful to seabirds — between 150,000 and 450,000 marine birds are killed in the North Sea and North Atlantic regions each year by the routine release of oil from tankers. It's no wonder that a sea surface completely free of an oil film is quite rare.

It's difficult to generalize about the effects that a concentrated release of oil (an oil spill) will have on the marine environment. The consequences of a spill vary with its location and proximity to shore; with the quantity and composition of the

oil; with the season of the year, currents, and weather conditions at the time of release; and with the types of animals and plants present in the affected communities. Intertidal and shallow-water subtidal communities are most sensitive to the effects of an oil spill.

Spills of *crude* oil are generally larger in volume and more frequent than spills of refined oil. Most components of crude oil do not dissolve easily in water, but those that do can harm the delicate juvenile forms of marine organisms in minute concentrations. The remaining insoluble components form sticky layers on the surface that can clog adult organisms' feeding structures and decrease the sunlight available for plant photosynthesis. Even so, crude oil is not highly toxic, and it is biodegradable. Though crude oil spills

mental damage. In a similar accident in Mexico, the tanker *Tampico* went aground and dumped her load of refined gasoline into an unspoiled Baja California bay. The area still shows biological scars after nearly three decades.

The methods used to contain and clean up oil spills sometimes cause more damage than the oil itself. The detergents used to disperse oil are especially lethal to living things. Cleanup of the 1969 *Torrey Canyon* accident off the southern coast of England, one of the first large tanker accidents, did much more environmental damage than the 110,000 tons of crude oil released. Resort beaches in the south of England were closed for two seasons — not because of oil residue but because of the stench of decaying marine life killed by the chemicals used to make the shore look clean!

More sophisticated methods were used in dealing with the *Exxon Valdez* disaster, the worst oil spill in U.S. history. The supertanker *Exxon Valdez* ran aground in



Alaska's Prince William Sound on March 24, 1989. Almost 11 million gallons (38,000 tons) of Alaska crude oil — about 22 percent of her cargo — escaped from the crippled hull. Only about 17 percent of the oil was recovered by a work crew of more than 11,000 people using containment booms, skimmer ships, bottom scrapers and absorbent sheets. About 35 percent of the oil evaporated, eight percent was burned, five percent was dispersed by surfactants, and five percent biodegraded in the first five months. The rest of the oil, some 30 percent of the spill, formed oil slicks on Prince William Sound and fouled more than 300 miles of coastline. The biological cost of the spill will not be known for a decade. The financial cost

fungicides, and we consume lead from such seemingly innocuous sources as certain kinds of pottery glazes, the solder in metal cans, gasoline additives and flaking paints. To these sources must now be added the amount of mercury and lead we obtain from some seafoods taken near shore in highly industrialized regions. Particles containing heavy metals reach these areas through runoff from land during rains, and the lead concentration in some shallow water bottom feeding species is increasing at an alarming rate.

Copper, another hazard, is so effective at killing marine organisms that it has long been used in marine anti-fouling paints. The ship *Pac Baroness*, a freighter carrying 23,000 tons of finely powdered copper, sank in 1,480 feet of water off the coast of Central California after a collision in 1987. Her toxic cargo was scattered over the seabed, and a plume of copper-tainted water has been detected 24 miles down current from the wreck. Marine life has been significantly disrupted in the area, which is a major fishing zone for Dover sole and rock cod. A similar incident off Holland in 1965 killed more than 100,000 fish and destroyed commercial mussel beds.

In the wellness-conscious 1990s seafood is seen as safe and healthful. With the exception of food species caught in and near harbors and bays, it still is. But with the ocean still receiving the contaminated runoff from the land, the rain of pollutants from the air, and the fallout from shipwrecks, we can only wonder how much longer our catch will be safe.

#### Synthetic Organic Chemical Pollution

Heavy metals are not the only poisons that may contaminate our seafood. Many



*The amount of oil entering the ocean has increased greatly in recent years due to our growing dependence on petroleum products.*

different synthetic organic chemicals also enter the ocean and become incorporated into its organisms. Ingestion of even small amounts of these compounds can cause illness or even death.

Halogenated hydrocarbons — a class of synthetic hydrocarbon compounds containing chlorine, bromine and iodine atoms — are used in pesticides, flame retardants, industrial solvents and cleaning fluids. The concentration of chlorinated hydrocarbons — the most abundant and dangerous halogenated hydrocarbons — is so high in the water off New York State that officials have warned women of childbearing age and children under 15 not to consume more than half a pound of local bluefish a week. (They are told *never* to eat striped bass caught in the area.) One administrator for the U.S. Environmental Protection Agency has written, "Anyone who eats the liver from a lobster taken from an urban area is living dangerously."

The level of synthetic organic chemicals in seawater is usually very low, but some organisms can concentrate these toxic substances in their flesh at higher levels in the food chain. This biological amplification is especially hazardous to top carnivores in a food web because high concentrations of these chemicals can affect the animals' metabolism and immune systems. Production of synthetic organic chemicals subject to biological amplification in food chains presently exceeds 100 million tons each year. Vast volumes of ocean will be affected if the predicted one percent of that production reaches the sea.

#### Eutrophication

Not all pollutants kill organisms. Some dissolved organic substances act as fertilizers which speed the growth of marine plants. Too much fertility may be as destructive as too little, however. The growth of some species is stimulated to the detriment of others, destroying the natural biological balance of an ocean area. The extra nutrients come from sewage treatment plants, factory effluent, accelerated soil erosion or fertilizers spread on land.



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*Last September more than 306,000 pounds of trash was picked up off our beaches during the annual Coastal Cleanup Day.*

exceeded 2.2 billion dollars by September 1990.

The best way to deal with oil pollution is to prevent it from happening in the first place. Tanker design is being modified to limit the amount of oil intentionally released in transport. Legislation is being considered that will limit new tanker construction to stronger double-hull designs (although shipping experts are uncertain that even a double-hull design could have prevented the *Exxon Valdez* spill). Perhaps most important, crew testing and training are being upgraded.

#### Heavy Metals Pollution

The dangers of heavy metal poisoning are of great concern because heavy metals enter the food chain. Among the dangerous heavy metals being introduced into the ocean are mercury, lead and copper.

Human activity releases about five times as much mercury and 17 times as much lead as is derived from natural sources, and incidents of mercury and lead poisoning, major causes of brain damage and behavioral disturbances in children, have increased dramatically over the last two decades. We accumulate mercury in our tissues from the fillings in our teeth and from eating foods contaminated with



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*"Ghost" fishing nets continue entangling target and non-target species alike.*



They usually enter the ocean from river runoff. Eutrophication, as the unbalanced growth process is called, is occurring at the mouths of almost all the world's rivers.

The most visible signs of eutrophication are the red tides, yellow foams and thick green slimes of vigorous plankton blooms. These blooms usually consist of one dominant single-celled plant that grows explosively, overwhelming other organisms. Huge numbers of cells can choke the gills of some animals and, at night when sunlight is unavailable for photosynthesis, deplete the free oxygen in surface water. Toxic substances released from these abundant algae can sicken or kill other species and generate globs of foul-smelling foam. In the summer of 1989 beaches in New Jersey and along the German coast of the North sea were covered by foam more than three feet thick!

These exceptional algae blooms appear to be increasing in number and intensity. There is little mention of foam events before about 1930, but since 1978 there has been at least one every year. A similar pattern has been reported for red tides. Think of how much more foam you've noticed on our beaches recently.

#### Solid Waste Pollution

Not all pollutants enter the ocean in a dissolved state; much of the burden arrives in solid form. Some solid waste is ultimately biodegradable, but plastic, which now makes up almost six percent of all solid waste, is not. Scientists estimate that some kinds of synthetic materials — plastic six-pack holders, for example — will not decompose for about 400 years!

Americans generate 133 million tons of plastic waste, about 1,100 pounds per person, each year. By the year 2000 plastics will account for more than 10 percent of all solid waste. Since the ocean is treated as the ultimate sink, much of this waste plastic finds its way to the sea. In September 1987, volunteers collected 307 tons of litter along the Texas Gulf Coast, most of it plastic. The haul included 31,733 bags, 30,295 bottles and 15,631 six-pack yokes. In isolated areas the plastic mounds can build to surreal proportions.

A 1987 survey by Cape Cod's Woods Hole Oceanographic Institution found that each square mile of ocean surface off the northeast coast of the United States has more than 46,000 pieces of plastic floating on the surface. This material included ropes, fishing line and nets, plastic sheeting and bags, and granules of broken plastic cups. A staggering 100,000 marine mammals and two million seabirds die each year after ingesting or being caught in plastic debris! Sea turtles mistake plastic bags for their jellyfish prey and die

from intestinal blockages. Seals and sea lions starve after becoming entangled in nets or muzzled by six-pack rings. The same kinds of rings strangle fish and seabirds. Adding ingredients to plastics that would hasten their decomposition would add only five to seven percent to their cost, but this price increase is presently unacceptable to industry.

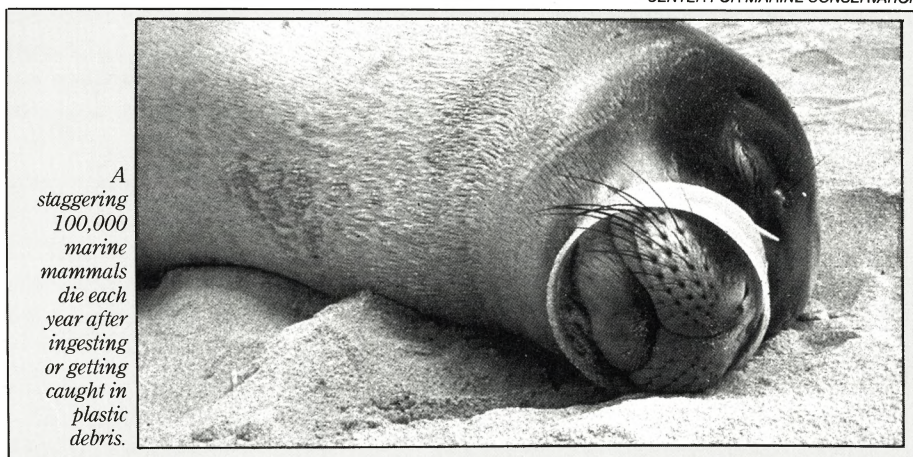
What should we do with plastic and other solid wastes such as glass and paper, disposable diapers, scrap metal, building debris and all the rest? Dumping it into the ocean is clearly unacceptable, yet places to deposit this material are becoming scarce. California's Los Angeles and Orange counties generate enough solid waste to fill Dodger Stadium every nine days! Transportation of waste to sanitary landfills becomes more expensive as nearby landfills reach capacity.

Is recycling the answer? The Japanese currently recycle about 50 percent of their solid waste and are importing even more;

and other debris — is digested, thickened, dried and shipped to landfills, burned to generate electricity, or dumped into the ocean. The liquid effluent wanders from its outlet and circulates with currents, but sludge and other insoluble residues may stay near the outfall or dump site for years. The amount of waste-water and sewage sludge has increased by 60 percent in the last decade.

About 1.9 billion liters (half a billion gallons) of treated sewage pours in the ocean every day from outfall pipes off Los Angeles. Treatment plants in Southern California are sometimes overwhelmed after rare heavy rainstorms when raw sewage enters the near-shore zone in large quantity. Rain or shine, areas around the entrance to San Diego Harbor are often so contaminated with sewage that anyone who enters the water runs the risk of bacterial or viral infection. Liquid effluent and sludge also contribute to eutrophication.

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A staggering 100,000 marine mammals die each year after ingesting or getting caught in plastic debris.

scrap metal and waste paper headed for Japan are the two biggest exports from the Port of New York. Americans are buying back their own refuse in the form of appliances, automobiles and the cardboard boxes that hold their televisions and compact disc players. Massachusetts has set a goal of recycling 25 percent of its waste. The direct savings to consumers, as well as the environmental rewards to ocean and air, will be significant.

The best solution is a combination of recycling and reducing the amount of debris we generate by our daily activities. We will soon have no other choice.

#### Sewage

About 98 percent of sewage is water. Sewage treatment separates the fluid component from the solids, treats the water to kill disease organisms and reduce the levels of nutrients, and releases it into a river or the ocean. The remaining sewage sludge — a semi-solid mixture of organic matter containing bacteria and viruses, toxic metal compounds, synthetic organic chemicals

#### THE COSTS OF POLLUTION

In 1985 government and industry in the United States spent about \$70 billion on the control of atmospheric, terrestrial and marine pollution — an average of \$289 for each American. This figure is equivalent to about 1.6 percent of the gross national product, or 2.7 percent of capital expenditures by U.S. business. That same year the U.S. lost four percent of its gross national product through environmental damage. Clearly the financial costs of pollution will continue to increase.

But there are other costs. Failure to control pollution will eventually threaten our food supply (marine and terrestrial), destroy whole industries, produce a greater disparity between have and have-not nations, and cause a decline in the health of all the planet's citizens. To these must be added the aesthetic costs of an ocean despoiled by pollution; few of us look forward to sharing our dives with oiled birds, jettisoned diapers or clumps of medical waste!

Continued



## THE DESTRUCTION OF HABITATS

The pollution processes we have discussed don't just affect individual organisms. They influence whole habitats, especially the complex and biologically sensitive near-shore habitats we divers enjoy.

### BAYS AND ESTUARIES

The hardest hit habitats are estuaries, the hugely productive coastal areas at the mouths of rivers where fresh water and seawater meet. Pollutants washing down rivers enter the ocean at estuaries, and estuaries often contain harbors, with their potentials for oil spills. As little as one part of oil for every 10 million parts of water is enough to seriously affect the reproduction and growth of the most sensitive bay and estuarine species. Some of the estuaries along Alaska's Prince William Sound, site of the 1989 *Exxon Valdez* accident, were covered with oil to a depth of a meter (3.3 feet) in some places! The spill's effects on the \$130 million-a-year salmon, herring and shrimp fisheries will be felt for years to come.

Other West Coast habitats have been polluted in different ways. Bottom sediments in Seattle's Elliott Bay are contaminated with a poisonous mix of lead, arsenic, zinc, cadmium, copper and PCBs. Tumors on the livers of English sole, which dwell on the sediments, have been linked to these compounds. Pollutants are so

Besides chemical pollution, estuarine habitats are also being assaulted by sedimentation and filling. In the 1960s and

*Adding ingredients to plastics that would hasten their decomposition would add only five to seven percent to their costs, but this price increase is presently unacceptable to industry.*

1970s California led the world in the acreage of bays and estuaries filled for recreational marinas. Harbors grew smaller as more of their area was filled for docks and storage facilities. One hundred fifty years ago San Francisco Bay covered 437 square miles. Today only 179 square miles remain — the rest has been filled in! The filling of estuaries is just as threatening to the natural reproductive cycles of shrimp and fish as poisoning by toxic wastes.

Some states control the development of coastal regions. A citizen's initiative passed by Californians in 1972 limited the development of that state's coastal zone. Massachusetts laws make it illegal to fill any marsh or estuarine region, even areas that are privately owned. Similar legislation is pending in a few other coastal states.

### CORAL REEFS

Divers prize coral reefs as the ultimate

CENTER FOR MARINE CONSERVATION



of about 95 percent of the individuals of one sea urchin species in 1983-84, and a slowly spreading coral malady known as white-band disease. Biologists do not know for certain what caused these disturbances, but increasing pollution is thought to be partially responsible.

Some chemical pollution is intentional. Especially damaging to tropical reefs has been the practice of using cyanide to collect tropical fish. Fishermen squirt a solution of sodium cyanide into the reef to stun valuable aquarium species. Many of these fish die; those that survive are sent to collectors all over the world. The coral organisms (and other invertebrate inhabitants of the reef) are stressed by the cyanide and usually die. As if this assault wasn't bad enough, reefs around many Micronesian and Polynesian islands have been ruined by the discharge of shipping wastes and the injection of untreated human sewage.

Not all coral reef pollutants are chemicals. Fishermen in Indonesia and Kenya dynamite the reefs to kill food fish that hide among the coral branches. Reefs throughout the world are mined for construction material, ornamental pieces, or for calcium carbonate to make plaster and concrete. Sediments washing from local rivers have killed 75 percent of Costa Rica's Caribbean reefs. Philippine reefs are similarly endangered. By the early 1980s about 75 percent of the reefs surrounding the Philippines had been damaged beyond recovery by the effects of sedimentation and erosion. The economic loss of Philippine reefs is tremendous; more than 100,000 jobs and \$80 million in fish catches are lost each year. Because of lowered reef productivity, five million Filipinos are unable to catch the fish and crustaceans they need for proper nutrition. Half of all children living in coastal regions of the Philippines are malnourished. Many will die.

### MISMANAGEMENT OF LIVING RESOURCES

The maximum sustainable marine yield — the maximum number of fish, crustaceans and mollusks that can be caught



*According to Coast Guard estimates, each boater dumps 1½ pounds of trash into the ocean everytime he or she goes out for a cruise.*

abundant in southern San Francisco Bay that clams and mussels contain near-lethal concentrations of heavy metals. Birds migrating from Central America to the Arctic Circle run a risk of being poisoned by stopping there to feed. There is also a risk to humans who eat ducks shot in this area because of the high concentrations of pollutants they contain. Similar warnings apply to all fish caught in and near Southern California estuaries between Santa Barbara and Ensenada, Mexico.

diving experience. If you've never enjoyed the spectacle of a reef dive, you'd better make plans to do so quickly. Marine biologists have been baffled by recent incidents of coral "bleaching" in the Caribbean and tropical Pacific. Bleaching occurs when corals expel the brownish algae that live in their tissues, turn a stark white, and then die. The 1989 bleaching event in the Caribbean is the most recent ecological disruption in a series that includes a massive fish kill in 1980, a die-off



without impairing future marine populations — probably lies between 110 and 190 million tons per year. Between 1950 and 1985 the commercial marine fish catch increased fourfold, and recent estimates suggest that we've come perilously close to maximum sustainable yield in some fisheries.

By the early 1980s overfishing had depleted the stocks of 24 valuable fisheries. Cod and herring had been overfished in the North Atlantic, and salmon and Alaska king crab were becoming scarce in the Pacific Northwest. The Pacific sardine had been reduced to commercial extinction (depletion of a resource species to a point where it is no longer profitable to harvest). The ocean's biological resources are under furious assault.

When faced with evidence of overfishing, the fishing industry seldom follows a rational course. The industry's dominant motivating force is usually quick financial return, even if it means depleting a stock and disrupting the equilibrium of a fragile ecosystem. Long-term stability is forsaken for short-term profit. When the catch begins to drop, the industry increases the number of boats and develops more efficient techniques for capturing the animals.

A particularly disruptive new fishing technique employs drift nets, fine vertically-suspended nets as much as 25 feet high and 50 miles long. Drift net technology was pioneered by a United Nations agency to help impoverished Asian nations turn a profit from what had been subsistence fishing. More than 800 Taiwanese, Korean and Japanese vessels now deploy about 30,000 miles of these "walls of death" each night — *more than enough to encircle the Earth!* Drift nets catch the target fish and squid, but they also entangle everything else that touches them, including turtles, birds and marine mammals. An estimated 18 miles of nets are lost each night — or about 11,000 miles per season. These remnants, made of non-biodegradable plastic, become "ghost nets" and continue snagging fish for decades.

We can only hope that an understanding of the consequences of the over-exploitation of living marine resources will precede their irreversible decline. I'm not holding my breath.

#### WHAT CAN BE DONE?

In a pivotal article published in 1968, Garret Hardin examined what he termed "The Tragedy of the Commons." Hardin's title was suggested by his study of societies in which some agricultural areas were held "in common"; that is, jointly owned by all residents. Citizens of these societies owned small homes, plots of land, and perhaps a cow which was put to pasture on the com-

mons. Each farmer *kept* the benefit of the milk and cheese given by his cow, but *distributed* the costs of cow ownership — overgrazing of the commons, cow excrement, fouled drinking water, etc. — among all the citizens. This arrangement worked well for centuries because wars, diseases and poaching kept the numbers of people and cows well below the carrying capacity of the land. But eventually political stability and relative freedom from disease allowed the human (and cow) population to increase. Farmers pastured more cows on the commons and gained more benefits. Soon the overstressed commons could no longer sustain the growing numbers of cows, and the area held in common was ruined. Eventually no cows could survive there.

The lesson applies to our present situa-

#### Suggestions for Further Reading

Carson, R. *Silent Spring*. 1962. New York: Houghton-Mifflin. This elegantly written book began the era of environmental awareness in the United States.

Cherfas, J. "The Fringe of the Ocean Under Siege from Land." *Science* vol.248 #4952, 13 April 1990. Excellent and up-to-date summary of the present assault on the ecology of the diver's world. Especially recommended. (This journal is available in any college or university library.)

Ehrlich, A and P. Ehrlich. *Earth*. 1987. New York: Franklin Watts. An excellent overview of environmental issues from two veterans in the field. Beautifully illustrated.

Hardin, G. "The Tragedy of the Commons." *Science* vol.162, pp 1243-48 (13 December 1968). The article in which Hardin makes the case that freedom in a commons brings ruin to all.



Our special thanks to the Channel Islands National Marine Sanctuary and the Center for Marine Conservation for donating the photographs used in this special feature.

For more information on the work being done by these organizations to protect our marine environment, contact the Channel Islands National Marine Sanctuary at 113 Harbor Way, Santa Barbara, CA 93109; (805) 966-7107, or the Center for Marine Conservation at 1725 DeSales St., NW, Washington, D.C. 20036 (202) 429-5609.

tion. Hardin noted that in our social system each individual tends to act in ways that maximize his or her material gain. Each of us gladly keeps the *positive* benefit of work, but willingly distributes the *costs* among all. For example, this morning I drove to my college office — the benefit to me was one trip to my office. A cost of this short drive was the air pollution generated by the fuel combustion in my car's engine. Did I route the exhaust fumes through a hose to a mask held tightly over my nose and mouth? That is, did I reserve the environmental costs of my actions for my own use just as I had reserved for myself the benefit of my ride to work? Of course not. I shared those fumes with my fellow Californians, just as you shared your morning's sewage with your fellow citizens, or the factory down the road shared its carbon dioxide with all the world.

Indeed, the world itself is our "commons." The modern tragedy of the commons rests on these kinds of actions.

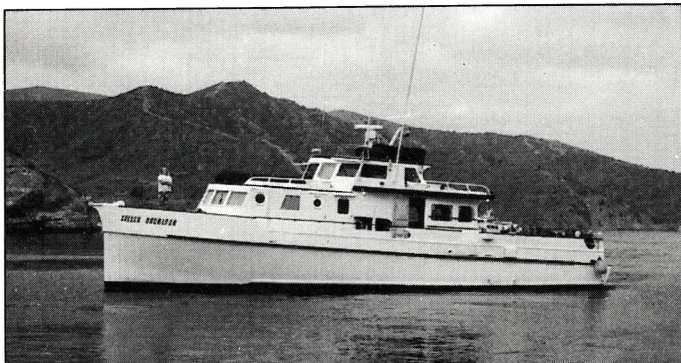
The carrying capacity of the whole "Earth-commons" may now be exceeded. Births now exceed deaths by 150 per hour. The number of people has tripled in this century and is expected to double again before reaching a plateau sometime in the next century. Another billion humans will join the world population in the next 10 years, 92 percent of them in third-world countries.

This exploding population is not content with using the same proportion of resources used today. Citizens of the world's least-developed countries are influenced by education and advertising to demand a developed-world standard of living. They look with justifiable envy on the United States, a country with 4.5 percent of the world's population that consumes 55 percent of the planet's raw material resources, 25 percent of the world's energy, and generates 30 percent of industrially-related carbon dioxide. Can the world support a population whose expectations are rising as rapidly as their numbers? In Garret Hardin's words, "We can maximize the number of human beings living at the lowest possible level of comfort, or we can try to optimize the quality of life for a much smaller population." The burgeoning human population is the greatest environmental problem of all.

At what point will the attitude of people in the developed nations change to incorporate the total situation of the town, state and planet held in common by all of us? The solution to environmental problems, if one exists, rests on information and communication of consequences. *It lies in education.* Each of us has an obligation to



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become informed on issues that affect the Earth, its ocean and its air. Once informed, we must act in rational ways. Chaining yourself to an oil tanker is not rational, but selecting well-designed, long-lasting, recyclable products made by responsible companies with minimal impact on the environment (and encouraging others to do so) certainly is.

Obvious answers and quick solutions are often misleading; a great deal of research and work is needed to give reliable insight into the many difficult questions that confront us. The present trade-off between financial and ecological considerations is often strongly tilted in the direction of immediate gain, of short-term profit, of immediate convenience. Education may be the only way to modify these destructive behaviors.

*Hardin suggests absolute freedom in a commons brings ruin to all.*

I wonder if we have time to change course?

Humanity is part of the natural world, not its master. We must learn to live in harmony with this small, beautiful, blue world. We need not relive the Tragedy of the Commons on a planetary scale. True convenience and true progress depend on the preservation of open space, serious and sustained attention to population control, conversion to a steady-state economy instead of one that must grow to stay alive, business incentives for preservation, the use of renewable resources and, above all, *public education in environmental issues*. We — divers and landlubbers alike — must ask ourselves difficult questions: "What is the optimal quality of life?" "How can I achieve balance between my material needs and the needs of the Earth?" "What do I want to leave for my children?" "How can I preserve the quiet, renewing ocean for myself, for *all* species, and for the future?"

Our cities are crowded and our tempers are short. Times of turbulent change lie before us. The trials ahead will be severe. Each of us, individually, needs to take a stand. We must preserve the sunsets and fog, the diving sites we treasure, the cold clean spray on our faces. And we need to start now. □

*Dr. Tom Garrison heads the Marine Science Department at Orange Coast College, the largest undergraduate teaching department for marine science in the U.S. He holds national awards for teaching excellence from the Marine Technology Society and the Salgo-Noren Foundation, coauthored the PBS series Oceanus, and is the author of a new text in general oceanography soon to be published by Wadsworth.*

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# Winter Wonderland

*Barkley Sound, British Columbia, in February? Sounds cold. Is cold! But the extraordinary diving is well worth the goose bumps.*



*Author doing a little topside exploring on Dicebox Island.*

NEIL McDANIEL

**F**our-thirty a.m. Dragging my camera boxes and dive equipment from a Los Angeles airport shuttle, I stepped out into the morning air and shivered. It was early February, the temperature was 30 degrees, and I couldn't believe I was nutty enough to be heading northward.

I soon discovered that my flights had been delayed due to furious snowstorms in Seattle. Sighing, I sat back and watched a bunch of skiers checking in for flights heading for Calgary and Banff.

The airplane gods finally smiled on me, and soon I was bouncing through heavy cloud banks toward Washington State. Landing in Seattle, I grabbed another flight to Vancouver, British Columbia, and from there climbed into a twin-engine Canadian Air puddle-jumper for a short

trip over the Strait of Georgia to Nanaimo on Vancouver Island.

By the time I landed in Nanaimo the storms had subsided and the sun was hanging low on the horizon, reflecting off the placid inland sea of the Strait of Georgia. Claiming my gear, the baggage attendant noticed that my equipment was not your typical cross-country ski stuff, the type of baggage he was accustomed to seeing around this time of year.

"What's all this gear for?" he asked.

"Scuba diving," I told him.

"Scuba diving?" He looked outside at the snow, then back at me. "Wait, don't tell me. You're from California, right?"

Grabbing a cab, I loaded up my gear and climbed in for the ride up to Port Alberni. The road between Nanaimo and Port Alberni is dotted with numerous fishing

*Article and photos  
by Darren & Stacey Douglass  
(Except where noted)*



villages. The scent of freshly cut pine permeates the air, and burning fires and the smell of salt add to the sensory bouquet.

Pulling up to the wharf at Port Alberni I piled my gear on my back and stepped gingerly down a snow-covered gangway past rows of crab and salmon boats in dire need of some paint. Fortunately, the vessel I was looking for turned out to be nowhere as menacing as these old fishing boats. Reaching the *Spirit of the Pacific*, I climbed aboard, kicked the snow off my Reboks and stepped inside the covered afterdeck. Inside the main salon I was greeted by Sven Juthans, one of the *Spirit's* owners, who had mercifully prepared a pot of hot coffee and sandwiches for me and the other frostbitten passengers who would be straggling on board throughout the course of the evening.

Well, the adventure had begun. I had actually managed to arrive at the *Spirit*, and soon we would be heading out into the chilly waters of Barkley Sound to get a taste of some of the best diving in British Columbia.

\*\*\*

The next morning I awoke to the aroma of fresh-brewed coffee and pine trees and the familiar hum of diesel generators. Dragging myself out of the cozy bunk, I pulled on my drysuit undergarments and a wool cap to fight off the morning cold. Peering out a porthole I suddenly realized the trees along the water's edge were moving. No, on second thought, we were moving. But I wouldn't have believed it if I hadn't seen it myself. For a boat diver used to the rocking and rolling of California boat trips, the lack of motion was unsettling. So I went topside to the wheelhouse where Sven and Captain Dave were pouring over some charts. As it



*Bamfield marine station, Alberni Inlet.*

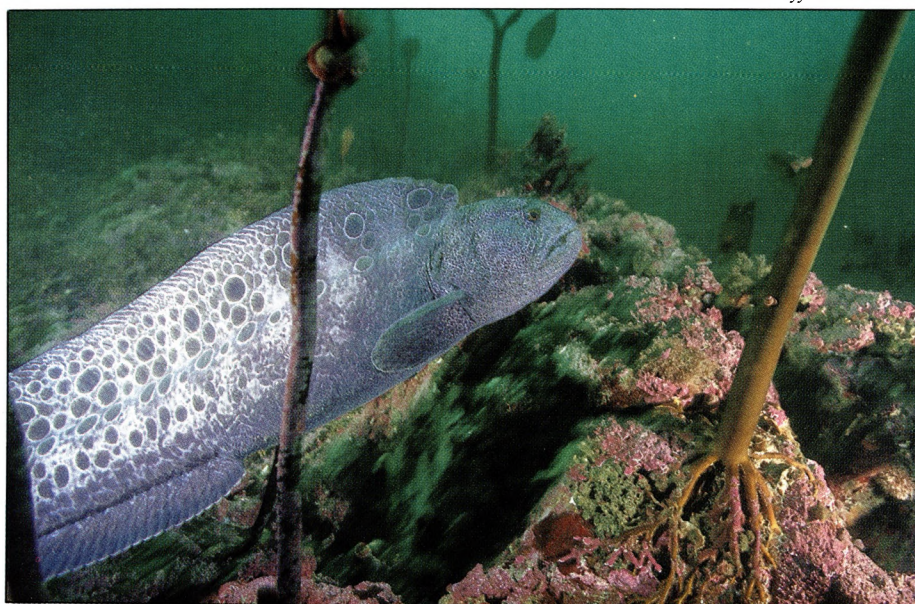


*Off Austin Island lies the wreck of the Vanlene, a Korean freighter that went down in 1972 carrying a cargo of Dodge Colts.*

turned out, we'd been under way for two hours. Alberni Inlet was as calm as a Disneyland riverboat ride.

I had heard there was rough weather

*A hefty wolf eel comes out to greet divers in the water off Weld Island.*



nearby. "So where is it?" I asked Captain Dave.

He grinned and handed me a pair of binoculars and pointed out past the islands. Sure enough, beyond the islands a huge Aleutian swell roared along in the open ocean. But here inside Alberni Inlet we were barely making a stern wake.

Dave pointed to a spot on the chart. "Our first dive site is less than 30 minutes away, near these islands." I looked down at the chart, then out the windows. Yeah, there were islands all right, hundreds of them. The water was a greenish blue, typical of a nutrient-rich environment. This was beginning to get interesting. I grabbed a coffee and Danish and went down to start suiting up.

Unbeknownst to me, in the middle of the night several other photographers had crept aboard, and now they were up and wandering around the boat. Neil McDaniel and Ed Weber, both residents of the Pacific Northwest, looked at me and then at each other, as if wondering what a pampered sunshine boy from Southern California was doing in the frozen north.

Although our collective camera equip-



## What's it Gonna Cost?

The *Spirit of The Pacific* takes only 11 divers on its multi-day dive trips. Generally, \$150 per day pays for over-night accommodations, three gourmet meals a day, tanks, air fills and weightbelts, and transportation to shore for beachcombing and sightseeing.

Round-trip air fare from LAX: Alaska Air or Canadian Air to Vancouver plus a flight to Nanaimo (Vancouver Island) costs \$350 to \$450 if booked well in advance. The price can go quite a bit higher during peak seasons or if you make a last-minute booking.

### Thermal Protection

Drysuits are required for diving Barkley Sound unless you're a member of the Polar Bear Club. Sixteen- to 23-ounce polypropylene undergarments (or something similar) are also necessary. Three-sixteenth-inch gloves work good, but heavy three-fingered mitts work better.

Bring wool socks to wear with your drysuit, and layered woollens and expedition wear for thermal protection while sitting around between dives. Sheepskin boots are great for those with poor circulation.

### Best Times to Dive

In the summer heavy plankton often reduces visibility to near zero. The fall and winter months are best, when visibility ranges from 20 to 40 feet, and occasionally more

### For more information

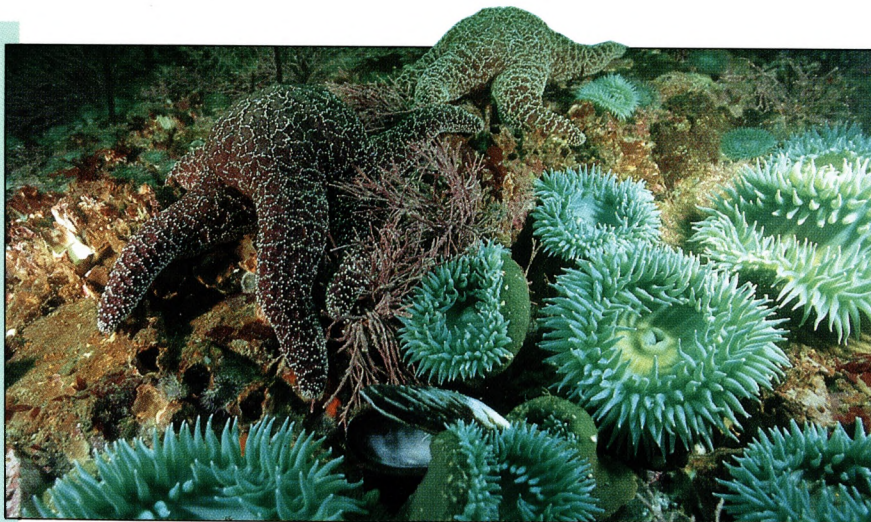
Pacific Spirit Charters, 4924 Argyle St., Port Alberni, B.C. Canada V9Y 1V6; (604) 723-1291.

Sea Ventures, Box 1058, Nanaimo, B.C. Canada V9R 5Z2; (604) 756-0544.

ment obliterated the galley tables, the other passengers were amiable and did not try to throw us or our photo gear overboard. It was a peaceful coexistence.

### WELD ISLAND (DEER ISLAND GROUP)

Captain Dave dropped anchor at Weld Island for our first dive. Neil graciously consented to show me the sights. We dropped over the side, descending through 40-degree water. I was immediately overwhelmed by the marine life. Rocky ledges were covered with anemones, scallops, sea fans and rockfish. At 80 feet large sea pens, tube anemones and giant nudibranchs traversed the sandy plain. The sea life was so dense that you had to be really careful when swimming or taking photographs so that you wouldn't squish some reef dwellers while photographing others.



*A pair of starfish invade a colony of green anemones at the Garden, a small cove on Helby Island.*

Many of the species found in Barkley Sound are identical to those found in Southern California's temperate waters, with one difference: they're a lot bigger. Even the common tube anemone is massive in British Columbia, as well as its predator, the giant nudibranch. These colorful nudibranchs reach lengths of over nine inches. Their shaggy appearance

between dives to eat, drink warm liquids and shake the chill out of your bones. Of course, doing so provides lots of opportunities to pig out. And pig out we did, for aboard the *Spirit* divers are treated to a variety of culinary delights throughout the day.

Relaxing up on the sundeck (or perhaps I should say "snowdeck") I enjoyed a cup



*Between dives passengers gather with their steaming mugs of hot chocolate up on the sundeck — or shall we say "snowdeck."*

makes them resemble Attila the Hun of the deep. Indeed, their seemingly barbaric treatment of unsuspecting tube anemones lends credence to such a title.

Surfacing from our first dive, I was slightly numb in the fingers, but certainly ready for more. On an average winter day in Barkley Sound you can usually make three dives (or four if you're part sea lion). However, when diving Barkley Sound, especially during the colder times of year, it's a good idea to strip out of your drysuit

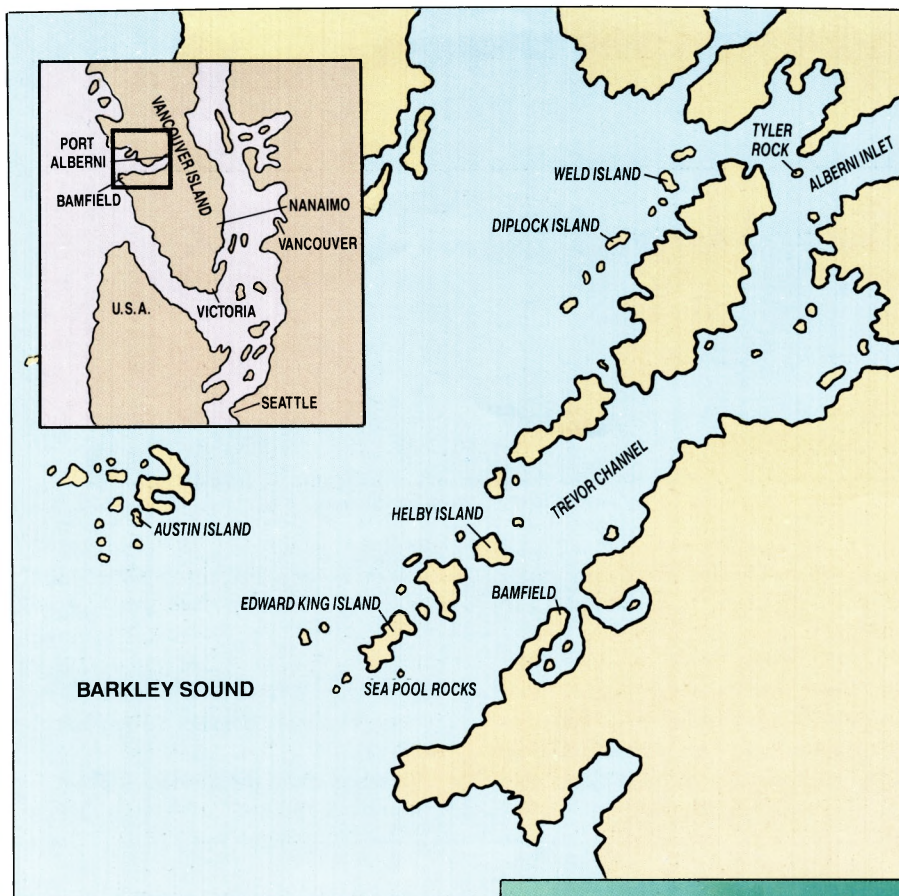
of coffee before climbing back into my gear for some serious diving.

### DIPLOCK ISLAND DROP-OFF (DEER ISLAND GROUP)

This is a small bull kelp-fringed ridge that peaks in shallow water and plummets sharply on both sides. Nature has carved a small depression into the top of the ledge where we encountered several resident wolf eels that were patient enough to bear the scrutiny of our camera lenses. The drop-offs tumble down to a sand bottom in about 80 to 90 feet of water. Brightly mottled rockfish can be found throughout the reef crevices, and scores of purple and yellow ringed-top snails dot the algae-covered rocks.

*Continued*





Photographer encounters a wall of metridium anemones at Sea Pool Rocks, Edward King Island.

#### THE GARDEN (HELBY ISLAND)

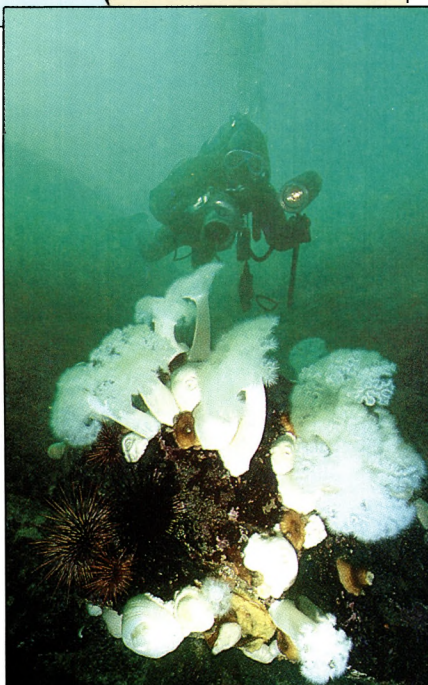
The Garden at Helby Island in the Deer Island Group is a small cove packed full of surprises. The cove is surrounded by a heavy pine forest that forms a still-water marina.

The scenery underwater is as picturesque as it is on the surface. The largest rock plummets vertically to more than 100 feet. Along the wall and on the ledges you can find scores of starfish and anemones and sedate rockfish that don't bat an eye when approached by divers.

The water is often layered with plankton zones that are like descending through a blizzard. But move a few feet either up or down and you break out into clear water again. The calm water makes the Garden a great night diving spot.

#### VANLENE WRECK (AUSTIN ISLAND)

Deep, dark, intense. The wreck of the *Vanlene* is considered one of Barkley Sound's most spectacular dives. In 1972 the Korean freighter, carrying a cargo of imported Dodge Colts, entered what it



thought was the Strait of Juan de Fuca bound for Seattle. The 450-foot vessel ran aground at Austin Island. Most of the wreck stayed above water long enough for salvagers to remove the cars. But eventually incoming swells battered the exposed quarters of the *Vanlene* and she disappeared beneath the surface.

Today the wreckage sits in 20 to 130 feet of water. The stern quarter is the deepest

portion of the wreck, resembling a wall of rusting iron. Heavy machinery is still intact, as are auto tires and seats lying in debris pockets. Large metridium anemones grow along the king posts and hull plates. There are still cargo holds you can venture inside. As wrecks go, the *Vanlene* is first-rate.

#### SATELLITE REEF (BAMFIELD)

Named after the HMS *Satellite* that plied Barkley Sound in the 1800s, Satellite Reef has some pleasant terrain and is an excellent night diving site. Here you'll find a rolling reef system with lots of crevices and a surge channel. There are dungeness crabs, and teal and plumrose anemones.

The diving at Satellite Reef varies in depth from 30 to 60 feet. Patches of wispy sea palms whip back and forth in the surge while thin strands of *macrocystis* kelp add to the beauty of this emerald-green garden.

#### SEA POOL ROCKS (EDWARD KING ISLAND)

Marking the entrance to Trevor Channel and Alberni Inlet and the gateway to the open ocean, the surge in the shallows of Sea Pool Rocks provides a nutrient-rich haven for filter-feeding organisms. Masses of starfish drape over one another in patchwork hues of purple, green, yellow, crimson and blue. Bright yellow sea lemons are nestled in among hermit crabs, dusky rockfish and greenlings. Occasionally you can encounter a wolf eel or two inside the rocky crevices. Many of the larger crevices form miniature canyons that sheer vertically where white, pink and orange anemones thrive in the current.

#### TYLER ROCK

One of Barkley Sound's most memorable deepwater pinnacles, the summit of Tyler Rock crests near the surface at 20 feet and plummets to the sand bottom 160 feet below. During the summer this area is frequented by huge six-gill sharks. These 10- to 15-foot animals are generally not dangerous; however, they are bold and will approach divers out of curiosity.

Diving the northwestern coast of British Columbia is a bonafide adventure. It is a relatively untouched area, a frontier with a small but growing number of pioneering divers eager to venture into the waters inhabited by whales, six-gill sharks, pinnipeds and other marine life.

When winter arrives in the northwest, many flock to nearby ski resorts. But despite icy boat docks and frosty air, the *Spirit of the Pacific* carries drysuit-clad divers to the islands and straits of a most magnificent inland sea — Barkley Sound, where there is still much to be discovered beneath the surface. □

Darren and Stacey Douglass are *PACIFIC DIVER's* feature editors.



# SHED SOME LEAD

*Almost all new divers leave their open water classes overweighted. The goal is to increase your underwater skills while fine-tuning your weightbelt load.*

Joe New Diver, weighing in at 150 pounds, is back on the afterdeck of the dive boat gearing up. He pulls on a 7mm wetsuit, swings his BC and tank up onto his back, then straps a whopping 34 pounds! of weightbelt lead around his waist. Dragging himself to the gate, he drops into the water, his BC overinflated like the Pillsbury doughboy. Joined by his buddy, Joe New Diver vents his BC and screams down through the water like a depth charge, exploding on the reef, smashing sea life and stirring up billows of silt that cloud the water for the divers to follow.

Almost all new divers are overweighted at the beginning of their certification classes. Since new divers are unaccustomed to wetsuits, BCs and breathing underwater, they tend to be tense and breathe a bit shallow. This is natural and normal. Consequently, many instructors purposely overweight their students so they can get settled comfortably on the bottom of the pool and learn about clearing masks and buddy breathing without being distracted by the ill effects of positive buoyancy.

But as time passes and you spend more time underwater, your breathing calms, your body relaxes and you find yourself able to move more gracefully through the water. All of these improvements in your diving technique mean you probably don't need near as much lead on your weightbelt as you once did.

Joe New Diver might have had to start out with 30-plus pounds of weight on his belt to get him through his first few pool sessions, but by the time he reached that gate on the dive boat he should have been able to knock off a good 10 pounds from his belt, and with more time and practice he might eventually be able to further reduce his weightbelt load by another five pounds, and perhaps even more, all without sacrificing his safety.

### **The Goal is to Attain Neutral Buoyancy**

If you were certified back before, say, 1980, you probably remember your instructor muttering a couple of mystical quotes from some ancient Greek intellec-

tual about objects being buoyed up by a net force equal to the amount of water displaced — or something like that. If you were certified more recently, your instructor probably simplified his speech by citing the concept of neutral buoyancy, which is the ideal state for a diver to be in.

A common definition of neutral buoyancy is "A diver with his BC deflated and his lungs normally inflated should float at the surface of the water at about eye level." In short, divers are not supposed to "sink." Divers are supposed to be "neutral."

However, neutral buoyancy at the surface means you're not going to be able to get to depth just by deflating your BC and waiting for gravity to pull you underwater. Neutral buoyancy at the surface means that getting down the first 10 to 15 feet takes some awareness of your lung capacity and some skin diving skills.

### **Let Your Lungs Work for, not Against, You**

Instead of purging his lungs like he purges his BC, it's very common for a new

diver, before dropping below the surface, to let his natural instinct for survival take over and take a deep breath. This additional air in his lungs, of course, is going to make it harder for him to get to depth.

When fully inflated, some divers' lungs can create a buoyant force of up to 14 pounds. Conversely, when exhaling they can create a similar negative force. By learning to control your lung volume, by finding that "balance" between inhalation (positive buoyancy) and exhalation (negative buoyancy), you can eliminate some of the weight on your belt.

Before submerging, purge the air from your lungs and descend, taking short breaths and exhaling further. At a depth of approximately 10 feet you should be able to start breathing normally again. And at the end of the dive when you're watching your rate of ascent, remember to purge your lungs along with your BC to help maintain control as you near the surface.

By letting your lungs work for you, it's



DAVE LYONS



much easier to attain that ideal state of buoyancy where your BC is used only to provide extra flotation at the surface and to compensate for wetsuit buoyancy loss due to the pressure effect at depth.

### Well-Honed Skin Diving Skills Mean Less Weight

The time your instructor spent teaching you various types of skin diving skills wasn't meant to torture you. Rather, it was to help transform you from a bumbling landlubber to a streamlined fish person.

Skin diving and snorkeling skills are essential for fluid descents, ascents and overall aquatic motor skills. The surface head-first, straight-legged, jackknife-type skin diving technique can help you get down through those most difficult first 10 feet and thereby help you keep the weight off your belt. Even if you return to a foot-first descent position after the first five feet or so, by using proper skin diving techniques to begin your dive you're well on your way to knocking additional lead off your weightbelt.

### Sport Divers' Bodies were not Created Equal

Ideally, you should strive to dive with lead equaling approximately 10 percent of your body weight. Some divers can actually dive with much less. Others,

however, try as they may, can't seem to even attain the 10 percent level. If you're one of these individuals, don't be discouraged; it doesn't necessarily mean that you're less accomplished a diver.

Sometimes two individuals appear to have the same mass and weight, but one has more body fat than the other. Small skeletal frames can "hide" more fat than larger ones, and fat is more buoyant than muscle tissue.

In short, everybody's physiological makeup is different, so you can't base your weight requirements on what your buddy is doing. You have to experiment on your own. See what works best for you.

### Sport Diving Gear was not Created Equal, Either

Diving equipment effects buoyancy to a degree, especially when upgrading styles, designs and sizes. Wetsuits, BCs and tanks all have buoyancy factors of their own. When switching from an aluminum to a steel cylinder, for example, it's possible to take off anywhere from two to 10 pounds from your weightbelt and still dive comfortably. Also, if your wetsuit is too big, you will be overly buoyant. Be sure all your gear fits the way it should — snug.

It seems that once diving students strap on lead for their first ocean dive, buoyancy

and weight reduction is discussed little beyond that. Hopefully, your instructor kept the topic of buoyancy in the spotlight throughout the course of your diving class. But if not, it's up to you to continually evaluate and reevaluate the amount of weight you're carrying around with you as your proficiency in the water improves and you become more comfortable as a diver.

Don't handicap yourself with more weight than you really need. If you can stand to lose some lead, by all means lose it. Your body will love you for it. □

### Eight Tips for Shedding Some Lead

1. **Consider ankle weights.** Two pounds of efficiently placed weight can translate into the removal of six pounds off the waist. How does this compute? Simple. Not everyone's "fatter" tissues are right at the waistline. It stands to reason that if you place a small amount of weight where it's needed, you can take off a little more where it isn't.

2. **Consider your scuba cylinder.** Is it working for you or against you? Certain steel and aluminum tanks are heavier and feature less buoyancy range shifts than standard aluminum 80s.

3. **Pay attention to your breathing patterns** (especially when at the surface or diving shallow). Do you breathe "deeply and fully" (overinflating the lungs), or do you keep a constant lung volume not much different than the way you're breathing right at this moment?

4. **Periodically check your weightbelt's lead load.** This is especially important if you are new to diving. As you improve your breathing patterns and diving skills, start taking off two pounds at a time until you arrive at the perfect weight load for you.

5. **Get fit!** Convert your fat to muscle. Muscle is much denser and less buoyant than fat.

6. **Dive often, monitoring your weight and breathing.** The more you dive, the better lung control you will develop and the less lead you will need.

7. **Develop and practice skin diving skills.** Proficient skin divers make better divers.

8. **Don't be BC dependent.** BCs, as good as they are today, were never designed to deal with overweighted divers. They were designed to compensate for the buoyancy loss due to wetsuit compression at depth and to provide buoyancy on the surface. Diving may be an equipment *intensive* activity, but it doesn't have to be an equipment *dependent* activity.



DIVE 

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## Channel Islands Dive Odyssey

### It Wasn't a Pretty Sight

Just got back from a dive trip to the Channel Islands, the first I've taken since returning from Baja. It was great to see kelp forests again and, yes, even the cold water was a pleasure. Somehow, it was all too easy down in Mexico. And that easy lifestyle made me a little lazy.

I did the dive on my own boat, *Leakin' Leena*. I could have taken a charter dive boat, of course, but after what happened last time with the Chief I think I'm going to stay away from charter boats for awhile. Besides, with what PACIFIC DIVER pays me I can't afford to be shelling out cash for luxuries like dive trips. Or groceries or clothing or rent or bus fare, for that matter. But I digress.

I went over to the island with an old friend and diving partner of mine. We'll call him Ralph, not his real name; if I used his real name chances are we would no longer be friends (you'll see what I mean in a minute).

Anyway, Ralph, who like me is an aging baby boomer forever young in his delusions, jumped at the invitation to partake in some rugged offshore diving, the kind of diving we used to do all the time back in the old days. Due to the pressures of his yuppie lifestyle, Ralph hadn't been in the water for a while. He was itching to catch up for lost time. And maybe I was too.

The big day found us motoring into a deserted cove on the north side of Santa Cruz Island. We were both ready for a bonafide Mike Nelson-type diving adventure. But wait. Since we were out on *Leakin' Leena* and not on a charter dive boat, we didn't have a crew to pamper us. Part of the freedom of having your own boat is that you get to do all the work. So we fumbled around with the anchor for a while, then when it was finally set we hauled my Avon inflatable out of its locker, pumped it up, muscled it over the side, then wrenched our backs fitting a five-horse outboard motor to its wooden transom.

We needed the inflatable because it was too exposed at the dive site, which was about a half-mile east of our position, to leave *Leakin' Leena* unattended while we were in the water. So we anchored in this

protected cove, and proceeded to haul out our tanks and dive gear.

It's truly a pathetic sight to watch two grown men trying to put their gear together while standing in a sailboat cockpit about the size of a bathtub. This was a lot more work than I had remembered. Much — I mean *much* — harder than down in Baja. But then, down in Baja I didn't have all this additional equipment, like the heavy wetsuit, the booties and gloves, and the extra lead on my weightbelt.

At any rate, by the time we had our gear assembled and loaded in the inflatable and had pulled our wetsuits on, we were both pretty tired, and we hadn't even gotten wet yet. Ralph hefted his weightbelt to strap it around his waist, then sighed and dropped it into the inflatable. "I'll put it on later," he said, which seemed like a pretty good idea at the time.

Motoring over to the dive site our enthusiasm revived. For those few minutes all we had to do was sit there in our wetsuits and look heroic, like frogmen heading into Omaha Beach. Sure, we may have been a few years older, and so what if we had gotten ourselves a little winded back there on *Leakin' Leena*. All that mattered now was that we were on our way, two Channel Islands diving veterans. Hell, we had started diving back when wetsuits were black and tanks were gray like God intended them to be. We weren't like all those modern-day divers with their purple fins and fancy-pants wetsuits. Purple fins? Get serious!

God I felt great! I felt like I could bite the head off a mako shark! Look out ocean, here come a couple dudes who've been around the block a couple times! Yessir!

We reached the dive site and tied the Avon off to a patch of kelp. Biting at the bit, we looked at each other and grinned our macho grins, then reached for our gear.

Remember how I said *Leakin' Leena's* cockpit was the size of a bathtub? Well, *Leakin' Leena's* cockpit was the size of the Rose Bowl compared to that damn rubber boat. Lurching for our gear, which was tumbling around our feet, we struggled to finish suiting up.

"Hey, those are MY fins!" Ralph



By John Francis

growled.

"Oh yeah? Well where are my gloves?"

"I think they're under your mask."

"Where's my mask?"

"Under my weightbelt!"

Sweat was trickling down my back. I strained to pull on a fin and smacked Ralph in the face with my elbow, which caused him to drop his weightbelt back down on my mask. Looking sheepish, he picked up the belt again and tried to stretch it around his expanded girth, but came up about two inches short.

"It used to be long enough," he whined.

"I used to have hair too," I snapped as I punched him in the gut so he'd suck it in. We got the belt clasped then collapsed into the bottom of the boat, panting like a couple of dogs who had just chased the mailman around the block. But at least now we were ready to hit the water. With looks of relief we rolled over the side.

"Uh, John!" Ralph exclaimed as he clung to the side of the inflatable.

"What now?" I asked, relishing the cold water coursing through my wetsuit.

"Catch my tank! Catch my tank!"

Catch his tank? What the hell did he mean, catch his tank? Then I saw what he meant. The cambuckle on his backpack had come loose when he did his rear-roll entry — right into a clump of clingy kelp.

So there was Ralph, his head draped with kelp fronds, his right hand behind his neck holding onto his regulator hoses while his tank dangled down where his weightbelt should have been but wasn't because that had come loose too. Fortunately, before the belt plummeted to the bottom Ralph's vast experience as a diver enabled him to catch the belt in his left hand while at the same time snatching the inflatable lifeline with his teeth so he wouldn't drift away from the boat.

It was really a good thing we were so good at this.

I shoved Ralph's tank back where it belonged and secured the latch, not an easy task when you're wrapped in kelp and bouncing against a rubber boat. Then we



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dealt with Ralph's weightbelt. I kept pinching my fingers in the buckle but finally we cinched it up and were ready to go diving. "All right, let's do it!" I reached over my right shoulder to grab my regulator. Couldn't find it. Then my second stage bumped me on my left cheek. What the...?

I couldn't believe it. I had attached my regulator upside down on my tank. Just then Ralph's weightbelt buckle popped again. He lunged and caught the end before it disappeared into the depths while once again snatching the inflatable's lifeline in his teeth.

I looked at Ralph, who was looking at me plaintively out of the corner of his eye, his bared teeth gripping the lifeline, me with my gear on ass-backwards. The irritation etched in his face dissolved into a look of defeat.

Being hard-headed old pros, we knew there was no shame in falling back to regroup. So it was back into the Avon again to rest a spell and consider the situation.

By this time the seas had risen a bit, and the Avon was really bouncing. Ralph was looking a little pale, and as a matter of fact, I wasn't feeling so hot myself.

It suddenly occurred to me that the visibility at this particular spot wasn't so good, and there would probably be no abs around either. Then our painter tore loose from the stand of kelp and we started drifting out to sea. I took that as a sign from the diving gods that we weren't meant to go diving that day.

Motoring back to the *Leakin' Leena*, we were punching into some pretty big swells. In no time the Avon was full of water. Somehow I'd forgotten the bailing bucket. My little outboard was whining at full throttle but we were barely moving.

"Don't worry Ralph," I said with a heroic sailor's grin. "These things can't sink."

Ralph glared at me then lunged for a fin that floated by in the bottom of the boat. He missed, and it washed over the side and disappeared.

"Uh, Ralph," I said after a particularly large wave swamped us for the second time. "We seem to be a bit overloaded. Would you mind getting out and hanging onto the side of the boat?"

I guess Ralph did mind, because he flashed me the universal finger signal that says "you better rethink that idea" as my mask floated between his legs. He didn't even try for it as slipped over the side and slowly sank in our wake.

Against all odds the outboard didn't quit and we made it back to *Leakin' Leena*. Inside the cove the water was calm and the

*(Continued on page 61)*



# Border Town Diving

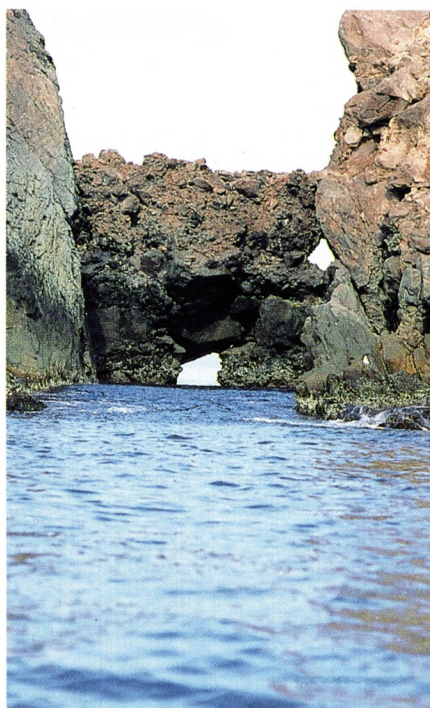
*Some of the best boat diving out of San Diego Harbor can be found at Mexico's Coronados Islands.*

*North Island is a great place to swim with sea lions.*

*Article and photos by Kenneth Corben*

The legends of Los Coronados, Mexico's northernmost Pacific islands, include tall tales of treasure and adventure, of pirates and rum running, of Chinese immigrant smuggling and casino gambling. Today, however, the Coronados' main attractions are found underwater.

First named the Desert Islands by Cabrillo in 1542, this cluster of four islands was renamed Las Islas Cuatros Coronados in 1602 by Spanish conquistador Sebastian Vizcaino in memory of the four Coronados brothers who were put to death for their Christian faith. Cortez's right hand man, Vizcaino is remembered by many for the infamous disappearance of the treasure-laden *Trinidad*. A small portion of *Trinidad*'s treasure was recovered in the early 1950s in San Diego County. Some people think Vizcaino buried the rest of the treasure somewhere on the Coronados. Unfortunately for treasure hunters, if this is true chances are the booty is going to stay hidden for awhile, since landing on the islands is prohibited.



*The Arch, located at the south end of North Island, is visible from the surface at low tide.*

## **NORTH ISLAND WALL DIVING & "THE ARCH"**

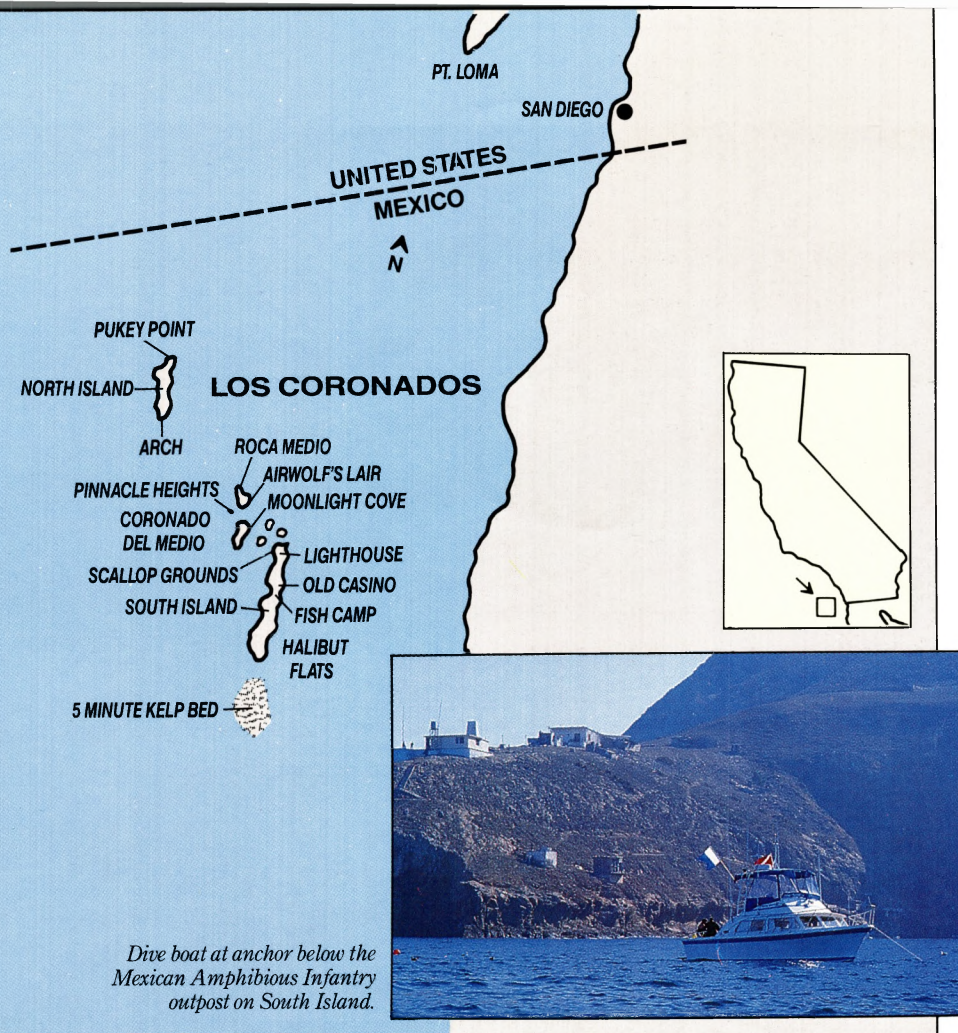
Only 15 miles from San Diego Harbor, North Island offers some exciting wall diving along its front — or northwestern — side. Exposed to the Pacific swells, this stretch of steep underwater terrain hosts beautiful purple hydrocoral colonies. However, the currents and swell make the northwest area an advanced dive site. In fact, this area is known by many who've been there as "Pukey Point."

A large sea lion colony inhabits the southwest point of North Island, near the "arch." The sea lions are notorious for their antics around divers. It's always fun to play with these acrobats of the sea, especially when large groups come out to frolic.

If you happen to have access to an underwater propulsion vehicle, North Island is a great place to use it. With a scooter you can circumnavigate the entire island in under a half hour, with dozens of sea lions in hot pursuit. It's an underwater version of cops and robbers that you won't want to miss.

Visible at low tide, at the southernmost





tip of North Island is the **Underwater Arch**. During moderate surge periods, diving through the arch with sea lions is a real kick. But don't forget to use caution along the vertical rock faces. If caught in a

surge flow, hold your mask and swim away from the rock face. Having been flushed in one of these surge flows before, I now know what a goldfish feels like on its way down the toilet.

*At North Island's "Pukey Point" purple hydrocoral colonies adorn the steep underwater terrain.*



## MIDDLE GROUNDS CAVERNS & PINNACLES

Roca Medio and Coronado del Medio are two small islands set close together in between the larger North Island and South Island. Often referred to as the "Middle Grounds," diving in this area is superb. Juvenile harbor seals are your constant diving companions. Lay on your back on the shallow bottom with fins extended and the young pups know its teething time. All sorts of photo opportunities are possible here so bring loads of film and video tape — and perhaps a spare pair of fins.

The islands of Middle Grounds also boast some exciting caverns that require no lines or pony bottles. The largest is **Airwolf's Lair** (named after the television show). It's exhilarating to swim through the narrow entrance into this cavern and then be able to look straight up and see blue sky. It's as if you're looking up through a volcano lava tube that's big enough to land a helicopter in.

Another special diving spot in the Middle Grounds is **Pinnacle Heights**. A series of pinnacles covered with colorful organisms, these submerged mountain tops begin in about 60 feet of water. The relief is steep and a swift current usually courses through the area, but oh what a dive site! There's an abundance of rock critters, and huge schools of yellowtail also pass through this area during summer migrations.

## SOUTH ISLAND SCALLOPS & HALIBUT

With an elevation of 672 feet and stretching for over two miles, South Island is the largest of the four Coronados. An operating lighthouse, a naval infantry post and the remains of a once famous casino can be found here.

Diving on the northwest point of South Island during mild swell conditions is a scallop hunter's paradise. The ocean currents supply these filter feeders with a belly full of nutrients, resulting in some pretty hefty specimens. Large calico bass also roam this area.

In late summer around the point on the southeastern sand flats dozens of bat rays can be found congregating along the bottom. The same area offers good halibut hunting, hence it's common name, "Halibut Flats."

**Five-Minute Kelp Bed**, so-named because it takes five minutes to get there from the southern tip of South Island when traveling at approximately 12 knots, offers a thick stand of kelp rising from a rocky bottom 60 feet deep. The area is susceptible to swift currents, but it's a

*(Continued on page 54)*



## READER SERVICE

### APPAREL

1. **KETTENHOFEN** — Custom wetsuits.

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3. **BLACK BART'S AQUATICS** — Full dive store in El Toro.  
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8. **THE DIVE BOAT 'PEACE'** — Dive boat out of Ventura, Southern California.  
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10. **HORIZON** — Dive boat out of San Diego, Southern California.  
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13. **R. C. DIVERS** — Dive boat information out of San Diego.

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15. **CETACEA** — Specialize in soft pouch weight belts, and other specialty products.  
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28. **LAHAINA DIVERS** — Dive boat, dive store and packages in Maui.  
29. **SMALL HOPE BAY LODGE** — Twenty beach front cottages on Andros Island, Bahamas.  
30. **TROPICAL ADVENTURES** — Travel coordination for exciting dive trips.

### TRAINING & EDUCATION

31. **SANTA BARBARA CITY COLLEGE** — 8-Page brochure and handout on their marine technology program.  
32. **STAN'S SKIN DIVING SHOP** — Information on dive boats and certification programs.

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33. **DAN (Divers Alert Network)** — A membership that makes diving safer — every time. Send for more information.  
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TIME OUT \_\_\_\_\_

ACTUAL DEPTH \_\_\_\_\_

MAX DEPTH \_\_\_\_\_

AIR PSI IN \_\_\_\_\_

AIR PSI OUT \_\_\_\_\_

TOTAL AIR USED \_\_\_\_\_

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El Toro, CA 92630  
(714) 855-2323

## Los Coronados Dive Facts

**HOW TO GET THERE:** To reach the sportfishing/dive boat piers, take I-5 south to Rosecrans, exit west. Pass the Navy base and turn left on Garrison Street, then right on Scott Street. H & M Landing and Point Loma Sportfishing will be on your left. (Call Mission Bay boats for directions to their docks.)

Private boats can launch from the Shelter Island public launch (free parking). Take I-5 south to Rosecrans, exit west. Turn left on Shelter Island Drive (about four miles west of I-5) and proceed to the bay. The launch area will be on your left across from Humphrey's Restaurant.

When traveling in your own boat, be sure to consult navigational charts for safety (although most of the time North Island is visible from the harbor mouth at 180 degrees magnetic).



At the submerged mountain tops of Pinnacle Heights you can find lots of colorful walls and swift currents.

## CORONADOS

(Continued from page 52)

haven for sheepshead and calico bass. At one time Five-Minute Kelp Bed was the home of black sea bass. Large schooling fish still pass through this area in search of shelter and food.

Since the water is relatively deep near the islands, the migration route of grey whales passes right through the Coronados. As these majestic animals travel south to spend December through February in Baja California lagoons, whale



## DIVE BOATS RUNNING TO THE ISLANDS:

### 10 or More Divers:

*America II*, (619) 584-0742

(Departs Mission Bay)

*Horizon*, (619) 277-7823

(Departs H & M Landing, San Diego)

*Bottom Scratcher* and *Sand Dollar*,  
(619) 224-4997

(Depart Point Loma Sportfishing,  
San Diego)

### Six Pacs (Six Divers Maximum):

*Always an Adventure*, (619) 944-4518

(Departs San Diego)

*Lois Ann*, (619) 452-9985

(Departs Mission Bay)

*Hydrodiver*, (619) 273-1226

(Departs Mission Bay)

**GENERAL CONDITIONS:** Blue water with visibility ranging from 20 to 60 feet and better. There's good diving year-round with temperatures from the low 60s to low 70s.

### FISH & GAME REGULATIONS:

Both Mexican and California laws must be observed when departing and returning aboard California-based dive boats. Private vessels need Mexican boat permits and a Mexican fishing license for everyone on board. These licenses are available at Mexican Consulates, many Mexican insurance outlets and most San Diego-based fishing supply stores. Most commercial dive boats include the permits in their charter fees, but check just to make sure.

While hunting in Mexican waters all lobster and abalone are off limits as these species are the mainstays of the local economy. The taking of fish and scallops is governed by California Fish & Game laws.

*Know the rules: San Diego's Fish & Game office:* (619) 237-7311.

Scallops: Limit, 10. No season or size limit. Halibut: Limit, 5. 22-inch minimum length.

watching can be a great way to spend your surface interval time.

Only minutes from San Diego Harbor and offering a variety of diving choices for hunters, photographers and sightseers alike, the Coronados Islands can provide you with an easy, quick and cheap way to enjoy some "international" island diving, and you can still be home in time for dinner. ☐

Filmmaker Ken Corben is the owner/operator of *Always an Adventure* dive charters. He resides in Leucadia, California.

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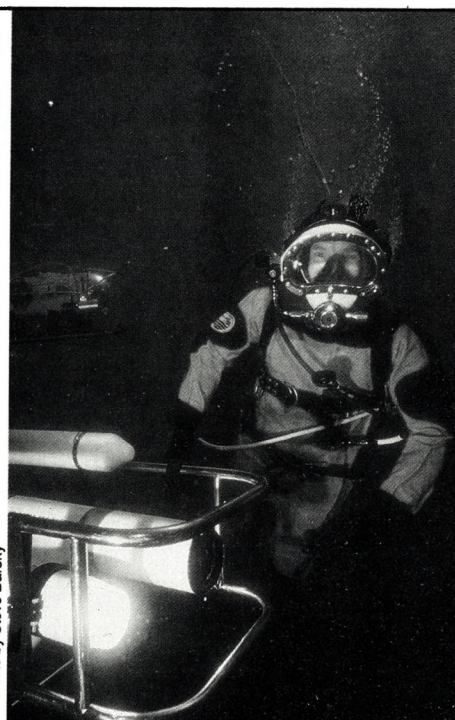
- SCUBA, Advanced thru Instructor
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Photo by Steve Barsky



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# DIVE BOAT SCHEDULES

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### Cypress Sea, 408/244-4433

Breakwater Cove Marina  
50/20 Divers/Capt. Tim Smith  
All trips to Monterey/Carmel areas.  
Available daily.

#### January:

- 5 Steele's Dive Shop,  
415/682-5082
- 6 Any Water Sports,  
408/244-4433
- 12 Any Water Sports,  
408/244-4433
- 13 Ron Pavella, Private
- 19 Wallin Dive Store, 415/369-2131
- 20 Anchor Shack, 415/825-4960
- 26 Ocean Odyssey, 916/758-3483
- 27 Rod Rodriguez, 415/657-1004

#### February:

- 2 Steele's Dive Store,  
415/682-5082
- 3 Any Water Sports,  
408/244-4433
- 9 Any Water Sports,  
408/244-4433
- 10 Flippers Dippers, 408/280-1010
- 16 Wallin Dive Store, 415/369-2131
- 17 Anchor Shack, 415/825-4960
- 23 Ocean Odyssey, 916/758-3483
- 24 Rod Rodriguez, 415/657-1004

#### March:

- 2 Steele's Dive Store,  
415/682-5082
- 3 Any Water Sports,  
408/244-4433
- 9 S.F. Reef Divers, Private
- 10 Outriggers Dive Clubs, Private
- 16 Wallin Dive Store, 415/369-2131
- 17 Anchor Shack, 415/825-4960
- 23 Ocean Odyssey, 916/758-3483
- 24 Rod Rodriguez, 415/657-1004
- 30 Lodi Skin Divers, 209/333-2343

### Silver Prince, 408/484-9245

Monterey Wharf II  
40/15 Divers/Capt. Gary Goulart, Bert  
Weiner  
Call number above for open boats.  
Operates on weekdays upon request.

#### January:

- 5 Fremont Dive Center,  
415/657-1004
- 6 Scuba Plus, 209/957-2822
- Olympic Scuba School,  
415/933-6045
- 12 Undersea Adventures,  
415/838-2348
- 13 Open Boat
- 19 Pacific Offshore Divers,  
408/265-3483
- 20 Valley Skindiving,  
209/333-2342
- 26 Bamboo Reef, 415/362-6694
- 27 Valley Aquatics, 209/527-2822

#### February:

- 2 American Aquatic Adventure,  
209/578-0515
- 3 Undersea Adventures,  
415/838-2348
- 10 Valley Skindiving,  
209/333-2343
- Olympic Scuba School,  
415/933-6045
- 16 Pacific Offshore Divers,  
408/265-3483
- 17 Scuba Town, 415/939-3483
- 23 Bamboo Reef, 415/362-6694
- 24 Valley Aquatics, 209/527-2822
- Olympic Scuba School,  
415/933-6045

#### March:

- 2 Ukiah Skin & Scuba,  
707/462-5396
- 3 Scuba Plus, 209/957-2822
- Olympic Scuba School,  
415/933-6045
- 9 Undersea Adventures,  
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- 10 Valley Skindiving,  
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- 16 Pacific Offshore Divers,  
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- 17 Scuba Town, 415/939-3483
- 23 Bamboo Reef, 415/362-6694
- 30 Open Boat

### Xeno, 408/426-7376

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## SANTA BARBARA

### Conception, 805/962-1127,

805/963-3564

Sea Landing Breakwater  
75/40 Divers/Capt. Jerry Boylan

#### January:

- 19-20 Any Water Sports,  
408/244-4433

#### February:

- 1-2 High Sierra Divers, 916/477-7642
- 8-9 Discovery Charters,  
818/790-8276
- 16-18 Truth Aquatics Dive,  
805/962-1127
- 24-26 Dolphin Scuba, 916/929-8188

### Truth, 805/962-1127, 805/963-3564

Sea Landing Breakwater  
68/40 Divers/Capt. Bill Yznaga  
Call numbers above for open boats.

#### January:

- 4 Santa Barbara City College
- 5-6 Sea Sons, 714/735-3284

#### February:

- 8-9 Desert Divers Supply,  
702/438-1000
- 24-26 Dolphin Scuba, 916/929-8188

#### March:

- 2-4 Any Water Sports,  
408/244-4433
- 8-9 Sea Sons (1/2), 714/735-3284
- B.E.N.T. (1/2), 213/375-7121
- 14-16 Ocean Odyssey, 408/475-3483
- 23-25 Scuba Plus, 209/957-2822

### Vision, 805/962-1127,

805/963-3564

Sea Landing Breakwater  
90/40 Divers/Capt. Robbie Church

#### January:

- 19-21 Anchor Shack, 415/825-4960
- 25-27 Truth Aquatics Dive,  
805/962-1127

#### February:

- 1-3 Dave Faught, 408/446-5416
- 8-9 Ocean Funatics, 408/427-1620
- 21-23 Undersea Adventures,  
415/838-2348
- 25-27 Dolphin Scuba, 916/929-8188

#### March:

- 1-3 Bill Finstad, 415/949-0344
- 7-9 Discovery Charters,  
818/790-8276
- 14-16 Valley Aquatics, 209/527-2822
- 29-31 Bill Finstad, 415/949-0344

## VENTURA

### Chieftain, 805/652-2166

Ventura Harbor

50/20 Divers/Capt. David Rentfrow  
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Call number above for open boats.

### Liberty, 805/642-1233,

805/483-6612

Ventura Harbor Village  
85/40 Divers/Capt. Al Anderson  
Call number above for open boats.

### Peace, 805/658-8286

Ventura Harbor Village  
65/32 Divers/Capt. Bill Magee, Mike  
Roach

Call number above for open boats.

#### January:

- 12-13 Island Packers, 805/642-1393
- 16 San Nicolas: Open Boat
- 19 Five-Star Instructional Group,  
213/399-4386
- 20 Channel Islands Scuba,  
805/644-3483
- 21 Santa Rosa: Open Boat
- 23 Santa Rosa: Open Boat
- 26 West Coast Divers Supply,  
818/708-8136
- 27 Scuba Duba Dive, 818/881-4545
- 30 San Nicolas: Open Boat

#### February:

- 1-2 Captain Frog, 805/833-3781
- 3-4 Santa Monica Bluefins,  
805/499-6929
- 6 Santa Rosa: Open Boat
- 7 Anacapa/Santa Cruz: Open  
Boat
- 8-10 Anderson's Dive Shop,  
415/355-3050
- 13 Santa Rosa: Open Boat
- 14 Anacapa/Santa Cruz: Open  
Boat

### 15 PACIFIC DIVER DIVE BOAT

DAY 714/361-9765

- 16-18 World Sea Adventures,  
916/487-7433
- 20 Santa Rosa: Open Boat
- 21 Anacapa/Santa Cruz: Open  
Boat
- 22-24 Napa Gun & Dive, 707/255-1057
- 27 Santa Rosa: Open Boat
- 28 Anacapa/Santa Cruz: Open  
Boat

#### March:

- 1-3 Ken Snodgrass, 415/449-4736
- 6 Santa Rosa: Open Boat
- 7-9 Stu's Scuba Tours, 415/686-6111
- 10-12 Aqua Tu Tu's, 415/489-4036
- 13 San Nicolas: Open Boat
- 14 Anacapa/Santa Cruz: Open  
Boat
- 15 PACIFIC DIVER DIVE BOAT  
DAY 714/361-9765

### 19-20 Buqs-R-U's, 805/658-8286

21 Anacapa/Santa Cruz: Open  
Boat

23 Five Star Instructional Group,  
213/399-4386

24 Channel Islands Scuba,  
805/644-3483

27 Gull Island: Open Boat

28 Anacapa/Santa Cruz: Open  
Boat

30-31 Island Packers, 805/642-1393

### Scuba Luv'er, 818/346-4799

Ventura Harbor Village

65/35 Divers/Capt. Phil Bardini  
Call number above for all charter  
information.

#### January:

- 2 Mid-Week Special
- 4 Anacapa
- 5 Santa Cruz
- 6 Anacapa
- 9 Midweek Special
- 11 Shark Photo Expedition
- 12 Gull Island
- 13 Santa Cruz
- 16 Midweek Special
- 18 Santa Cruz
- 19 Anacapa
- 20 Sea Lion Rookery
- 23 Midweek Special
- 25 Fish Bowl
- 26 Santa Cruz
- 27 Anacapa
- 30 Midweek Special

#### February:

- 1 Anacapa
- 2 Fishbowl
- 3 Santa Cruz
- 6 Midweek Special
- 8 Sea Lion Rookery
- 9 Santa Cruz
- 10 Anacapa
- 13 Midweek Special
- 15 Valentine Dive
- 16 Gull Island
- 17 Santa Cruz
- 20 Midweek Special
- 22 Santa Cruz
- 23 Anacapa
- 24 The Arches
- 27 Midweek Special
- 29 Scorpion Point
- 30 Anacapa
- 31 Santa Cruz

#### March:

- 1 Anacapa
- 2 Fishbowl
- 3 Santa Cruz
- 6 Midweek Special
- 8 Sea Lion Rookery
- 9 Santa Cruz
- 10 Anacapa
- 13 Midweek Special

- 15 Shark Photo Expedition
- 16 Gull Island
- 17 Scorpion Point
- 20 Midweek Special
- 22 Anacapa
- 23 Santa Cruz
- 24 Anacapa
- 27 Midweek Special
- 29 Anacapa
- 30 Santa Cruz
- 31 Anacapa

### Spectre, 805/483-6612

Ventura Harbor Village  
85/36 Divers/Capt. Ted Cumming  
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### Tradewinds, 805/658-9152

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deMartino  
Available 7 days a week.

## CHANNEL ISLANDS

### Sandy Bay, 213/828-2418

32/6 Divers/Capt. Bob Perry  
Call for available dates.

## PORT HUENEME

### Sea Ventures, 805/985-1100

Sportfishing Landing  
55/28 Divers/Capt. Mickey Defazio

#### January:

- 5 Ventura College
- 6 Ventura College
- 12 Ventura College
- 13 Anacapa/Santa Cruz: Divers  
Supply of S.B., 805/964-0180

#### February:

- 13 Anacapa/Santa Cruz: Divers  
Supply of S.B., 805/964-0180

## SAN PEDRO

### Atlantis, 213/831-6666

22nd St. Landing  
65/35 Divers/Capt. Brian Dull

#### January:

- 5 Available for Charter
- 6 Available for Charter
- 12 Sport Chalet, 818/790-9800
- 13 Ski & Sport, 714/633-1880
- 19 Sport Chalet, 818/790-9800
- 20 Ski & Sport, 714/633-1880
- 26 Pacific Sculpins, 213/494-2521
- 27 Pasadena Scuba & Travel,  
818/796-2000

#### February:

- 2 Sport Chalet, 818/790-9800
- 3 Ski & Sport, 714/633-1880
- 9 Sport Chalet, 818/790-9800
- 10 Available for Charter
- 16 Sport Chalet, 818/790-9800
- 17 Ski & Sport, 714/633-1880
- 23 Sport Chalet, 818/790-9800
- 24 Pasadena Scuba, 818/796-2000

#### March:

- 2 Sport Chalet, 818/790-9800
- 3 Pacific Sculpins, 213/494-2521
- 23 Anacapa
- 10 Available for Charter
- 16 Sport Chalet, 818/790-9800
- 17 Available for Charter
- 23 Sport Chalet, 818/790-9800
- 24 Sport Chalet, 818/790-9800
- 30 Pasadena Scuba, 818/796-2000
- 31 Available for Charter

### Bold Contender,

818/366-2611

22nd St. Landing  
65/34 Divers/Capt. Jerry Shapiro  
Call for available dates.



# DIVE BOAT SCHEDULES

## Cee Ray, 213/519-0880, 213/867-9738

22nd St. Landing  
65/32 Divers/Capt. Arnold Lancaster,  
Tom Matlock

### January:

- 12 San Nicolas: Sport Chalet,  
818/790-9800
- 19 San Nicolas: Sea Sabres,  
213/947-0625
- 20 Santa Barbara: Marina del Rey  
Divers, 213/827-1131
- 26 Catalina: Sport Chalet,  
818/790-9800

### February:

- 2 Catalina: Sport Chalet,  
818/790-9800
- 9 Catalina: Sport Chalet,  
818/790-9800
- 16 Catalina: Sport Chalet,  
818/790-9800
- 23 Catalina: Sport Chalet,  
818/790-9800
- 24 Reef Seekers, 213/652-4990

### March:

- 9 Santa Barbara: Sport Chalet,  
818/790-9800
- 10 Santa Barbara: Marina del Rey  
Divers, 213/827-1131
- 16 Catalina: Sport Chalet,  
818/790-9800
- 23 Catalina: Sport Chalet,  
818/790-9800
- 30 Catalina: Sport Chalet,  
818/790-9800

## Charisma, 213/832-8304, 213/326-7460

22nd St. Landing  
78/35 Divers/Capt. John Hess  
Call for available dates.

## Encore, 213/832-8304, 213/326-7460

22nd St. Landing  
78/35 Divers/Capt. Randy Beaver  
Call for available dates.

## Golden Doubloon, 714/963-4378

22nd St. Landing  
65/34 Divers/Capt. Greg Elliott (Charters  
exclusively to Catalina.)  
Call number above for open boats or  
charters.

### January:

- 12 **PACIFIC DIVER DIVE BOAT  
DAY (Full Boat)**
- 13 Available for Charter
- 19 Black Barts Aquatics,  
714/496-5891
- 20 Divers Corner Dive Club,  
213/963-4378
- 26 Mr. Scuba, 714/838-6483
- 27 Marina del Rey Divers,  
213/827-1131

### February:

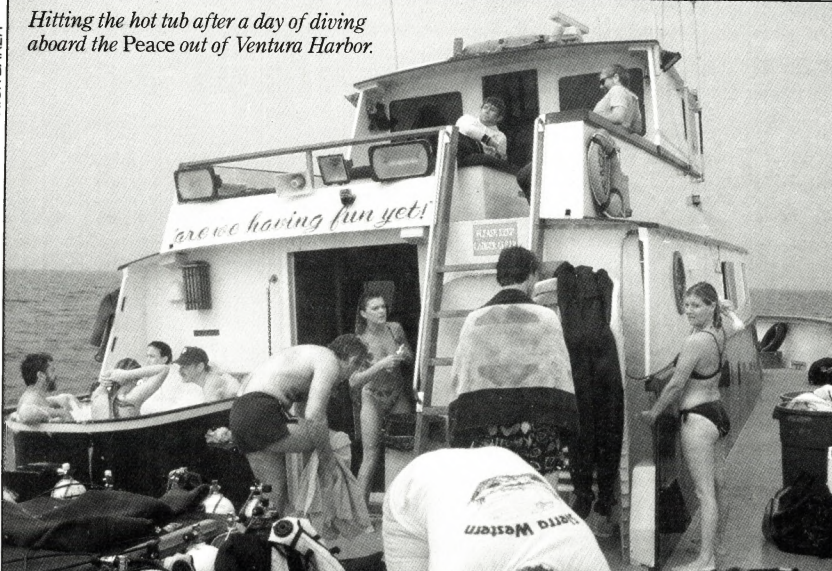
- 2 Available for Charter
- 3 Available for Charter
- 9 Black Barts, 714/496-5891
- 10 Marina del Rey Divers,  
213/827-1131
- 16 Available for Charter
- 17 Aquatic Center, 714/650-5440
- 22 Night Dive: Black Barts,  
714/496-5891
- 23 Mr. Scuba, 714/838-6483
- 24 Scuba Habitat, 714/594-7927

### March:

- 2 Mr. Scuba, 714/838-6483
- 3 Marina del Rey Divers,  
213/827-1131
- 9 Black Barts, 714/496-5891
- 10 Available for Charter
- 16 Available for Charter
- 17 Aquatic Center, 714/650-5440
- 23 Black Barts, 714/496-5891
- 24 Marina del Rey Divers,  
213/827-1131
- 30 Available for Charter
- 19 Black Barts Aquatics,  
714/496-5891
- 20 Available for Charter,  
714/963-3278
- 26 Mr. Scuba, 714/838-6483

RICK BAKER

*Hitting the hot tub after a day of diving  
aboard the Peace out of Ventura Harbor.*



27 Marina del Rey Divers,  
213/827-1131

## Magician, 213/548-6129

22nd St. Landing  
65/35 Divers/Capt. Ira Burdine  
Call number above for open boats.

### January:

- 5 Catalina: Open Boat
- 6 Catalina: Scuba Toys,  
714/527-0430
- 12 Catalina: Scuba Locker,  
714/653-1255
- 13 Catalina: Open Boat
- 19 Catalina: Open Boat
- 20 Available for Charter
- 26 Catalina: Sport Chalet,  
818/790-9800
- 27 Outer Island: American Diving,  
213/326-6663

### February:

- 2 Catalina: Scuba Haus,  
213/828-2916
- 3 Catalina: Scuba Toys,  
714/527-0430
- 9 Catalina: Scuba Locker,  
714/653-1255
- 10 Catalina: American Diving,  
213/326-6663
- 15-17 Cortez Bank: Closed Charter
- 23 Catalina: Sport Chalet,  
818/790-9800
- 24 Catalina: Scuba Adventures,  
714/825-2502

### March:

- 2 Catalina: Scuba Haus,  
213/828-2916
- 3 Catalina: Scuba Toys,  
714/527-0430
- 9 Catalina: Scuba Locker,  
714/653-1255
- 10 Catalina: Sport Chalet,  
818/790-9800
- 16 Catalina: Scuba Adventures,  
714/825-2502
- 17 Catalina: Divers West,  
818/796-4287
- 23 Scuba Habitat, 714/594-7927
- 24 Catalina: American Diving,  
213/326-6663
- 30 Catalina: Scuba Haus,  
213/828-2916
- 31 Outer Island: Scuba Toys,  
714/527-0430

## Maverick, 213/547-3824

22nd St. Landing  
58/25-30 Divers/Capt. Floyd Bryan  
Call number above for available dates.

## Scuba Queen, 213/548-5324

Cabrillo Marina  
65/33 Divers/Capt. Ed Lord  
Listed charters destined for Catalina.  
Call for available dates.

## Westerly, 213/833-6048

22nd St. Landing  
55/30 Divers/Capt. Jim Ingram  
Call above number for open boats.

### January:

- 12 Santa Barbara: Dive 'n Surf,  
213/372-8423
- 13 B.E.N.T., 213/375-7121
- 19 San Nicolas: Douglass Dive  
Club, 714/895-4076
- 20 Catalina/Backside: Dive 'n Surf,  
213/372-8423
- 26 San Clemente: Dive 'n Surf,  
213/372-8423
- 27 San Clemente/Backside:  
Desert Divers, 805/947-0863

### February:

- 2 Mr. Scuba, 714/838-6483
- 3 Catalina/Backside: Dive 'n Surf,  
213/372-8423
- 9 Santa Barbara: Douglass Dive  
Club, 714/895-4076
- 10 B.E.N.T., 213/375-7121
- 16 San Clemente: Dive 'n Surf,  
213/372-8423
- 17 San Clemente: Golden Reef  
Divers, 818/443-2103
- 22-23 San Nicolas: Douglas Dive  
Club, 714/895-4076
- 24 Catalina/Backside: Dive 'n Surf,  
213/372-8423

### March:

- 2 San Nicolas: Dive 'n Surf,  
213/372-8423
- 3 John Roodenberg,  
714/536-0404
- 9 San Nicolas: Douglas Dive  
Club, 714/895-4076
- 10 Catalina/Backside: Dive 'n Surf,  
213/372-8423
- 16 San Nicolas: Dive 'n Surf,  
213/372-8423
- 17 San Nicolas: Golden Reef  
Divers, 818/443-2103
- 20 San Nicolas: Dive 'n Surf,  
213/372-8423
- 23 San Nicolas: Desert Divers,  
805/947-0863
- 24 Mr. Scuba, 714/838-6483
- 30 Catalina/Backside: Hughes  
Dive Club, 213/324-8583
- 31 B.E.N.T., 213/375-7121

## Wild Wave, 213/534-0034

22nd St. Landing  
65/26 Divers/Capt. Mickey Pittman  
Call for available dates.

## LONG BEACH

## Mr. C, 213/831-9449

Long Beach Sportfishing  
50/40 Divers/Capt. Tom Rossin  
Call for available dates.

## Sundiver, 213/493-0951

Seaport Village  
53/28 Divers/Capt. Rich Wallace  
Call number above for open boats.  
Dates not listed are open for charter.  
Sundiver will be operating out of Mexico  
January-February, 1991.  
Call for more information.

### March:

- 2 Ski & Sport, 714/633-1880
- 3 West Coast Divers,  
818/708-8137
- 9 Marineers, 213/594-8360
- 10 Pacific Sporting Goods,  
213/434-1604
- 16 Pacific Sporting Goods,  
213/434-1604
- 19 Open Boat
- 23 Ski & Sport, 714/633-1880

## AVALON HARBOR

## King Neptune, 213/510-2616

65/30 Divers/Capt. Bob Kennedy  
Call number above for available dates.

## SAN DIEGO

## America II, 619/584-0742

Islandia Sportfishing Landing,  
Mission Bay  
35/17 Divers/Capt. Rich Cassens  
Call number above for open boats.

### January:

- 2 Kelp Forests & Wrecks: Open  
Boat
- 9 La Jolla Kelp & Wrecks: Open  
Boat
- 12 Wreck Alley: Open Boat
- 13 Wreck Alley: Open Boat
- 16 Kelp Forests & Wrecks: Open  
Boat
- 19 Wreck Alley: Open Boat
- 20 Wreck Alley: Open Boat
- 23 La Jolla Kelp Forests: Open  
Boat
- 26 Wreck Alley: Open Boat
- 27 Wreck Alley: Open Boat
- 30 Kelp Forests & Wrecks: Open  
Boat

## Bottom Scratcher,

619/224-4997  
Pt. Loma Sportfishing  
63/21-35 day Divers/Capt. G. Humphries

### January:

- 5 Coronados: Scuba Science,  
602/995-5926
- 12-13 San Clemente: Scuba Science,  
602/995-5926
- 19-20 San Clemente: Scuba Science,  
602/995-5926
- 26 Coronados: Scuba Science,  
602/995-5926

### February:

- 2-3 San Clemente: Scuba Science,  
602/995-5926
- 9-10 San Clemente: Scuba Science,  
602/995-5926
- 15-16 San Clemente/Cortez: La Jolla  
Divers, 619/459-2691
- 17 Coronados: La Jolla Divers,  
619/459-2691
- 18-19 San Clemente/Cortez: Harbor  
Dive Ctr., 415/331-0904

### March:

- 2-3 San Clemente: Scuba Science,  
602/995-5926
- 9 Coronados: Scuba Science,  
602/995-5926
- 16-17 San Clemente: Scuba Science,  
602/995-5926
- 23-24 San Clemente: Scuba Science,  
602/995-5926
- 29-31 San Clemente: Scuba Science,  
602/995-5926

## Horizon, 619/277-7823

H & M Landing  
78/35 Divers/Capt. Greg Grivetto  
Call for available dates.

## Sand Dollar, 619/224-4997

Pt. Loma Sportfishing  
65/28-35 Divers/Capt. Bill Johnston

### January:

- 6 Coronados: Ocean Enterprises,  
619/565-6054
- 7-8 San Clemente/Cortez: Action  
Sports, 505/836-3921
- 12 Coronados: Adventures in Div-  
ing, 714/499-4517
- 13 Coronados: Diving Locker,  
619/272-1120
- 19 Coronados: Sport Chalet,  
619/224-6777
- 26 Coronados: Diving Locker,  
619/272-1120
- 27 Coronados: La Jolla Divers,  
619/459-2691

### February:

- 2-4 San Clemente/Cortez: Pin-  
nacles Dive Ctr., 415/897-9962
- 16 Coronados: Scuba Science,  
602/995-5926
- 23-25 San Clemente/Cortez: Pin-  
nacles Dive Ctr., 415/897-9962

### March:

- 2 Coronados: La Jolla Divers,  
619/459-2691
- 18-20 San Clemente/Cortez: Discover  
Diving, 503/257-0669

## WASHINGTON

## Sea Wolf, 206/293-4248

Cap Sante Boat Haven  
55/18 Divers/Capt. Jess & Allan Starnes  
Available weekdays.  
Call above number for open boats or  
group charter information.

### January:

- 12/30-1  
/1 San Juan Islands
- 12-13 San Juan Islands
- 26-27 San Juan Islands

### February:

- 9-10 San Juan Islands
- 23-24 San Juan Islands

### March:

- 2-3 San Juan Islands
- 9-10 San Juan Islands
- 16-17 San Juan Islands
- 23-24 San Juan Islands
- 30-31 San Juan Islands

## Star Fire, 206/364-9858

Cap Sante Marina  
54/24 Divers/Capt. Gordon Bradley

### January:

- 5-6 San Juans
- 12-13 San Juans
- 19-20 San Juans
- 26-27 San Juans

## Washington Diver I & II,

206/676-8029  
21' & 27'6 Divers/Capt. Dennis Withner  
Available 7 days a week.  
Min. 4 divers to reserve boats or join  
open weekend charters.



## DIVE TRAVEL NEWS

### Stan Waterman Schedules a Photo Shoot Aboard the *Truk Aggressor*

January 13-20, 1991, four-time award-winning underwater cinematographer Stan Waterman will be exploring and filming the wrecks of the Japanese fleet in Truk Lagoon with visiting divers aboard the new *Truk Aggressor*. Stan will be doing a video production for film festival presentations, and in keeping with his popular style, *Truk Aggressor* guests will be on camera.

For more information contact the *Aggressor Fleet*, P.O. Drawer K, Morgan City, LA 70381; (800) 348-2628.

### Tillim Leads Summer Photo Trip to Kadavu, Fiji

Photographer Len Tillim, in conjunction with Adventure Express Travel of San Francisco, will be leading a photo/dive trip to Fiji August 22-31, 1991. The trip will be based at Kadavu, the fourth largest island in the Fijian chain, and will be geared toward underwater photography.

For complete information or to make reservations contact Len Tillim directly at (213) 973-5175 or Adventure Express Travel at (800) 443-0799.

### "Dive Vanuatu" Poster Contest is Looking for Photos

The National Tourism office of Vanuatu, Air Vanuatu, the M/V *Coriolis* and members of the Vanuatu Scuba Association are hosting the "Dive Vanuatu Poster Photo Contest." Eligible shots must be taken and submitted during the months of June or July, 1991.

The Grand Prize-winning photo will appear, with photo credit, on the official "Dive Vanuatu" poster which is distributed worldwide to promote diving in Vanuatu. The winning photographer will also receive a one-week dive vacation for two in Vanuatu. First, second and third place winners will receive prizes of dive equipment and underwater photo equipment.

Entry categories for the poster contest are wide angle, macro, standard lens and

wrecks. For more information, contact Judy Beaty with the Vanuatu Scuba Association, P.O. Box 209, Port Vila, Vanuatu; Fax #678-3889.

### Paul Humann Hosts Vanuatu Dive on the MV *Coriolis*

Underwater photographer Paul Humann will host a dive trip on the MV *Coriolis* to the islands of Vanuatu from June 30 to July 14, 1991.

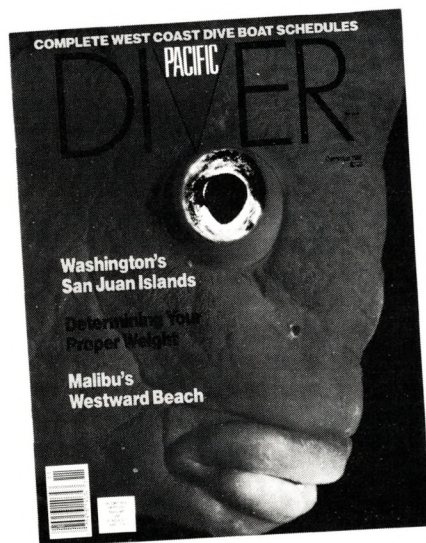
Humann will give a series of presentations on marine life and underwater photography each day. E-6 processing is available on board and Paul will be there to offer his expert assistance. For more information contact See & Sea Travel at (800) DIV-XPRT. □

**Research works.**



**American Heart Association**

## NOT JUST ANOTHER PRETTY FACE.



☐ Yes, I would like to take advantage of your special introductory offer. Send me 6 issues (1 year) of *Pacific Diver* for only \$14.95. (Regularly \$18.00 for 6 issues.)

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Signature \_\_\_\_\_

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Newport Beach, CA 92659-1027

2G90



## PRODUCT REVIEWS

### TruWest's Diving Parka

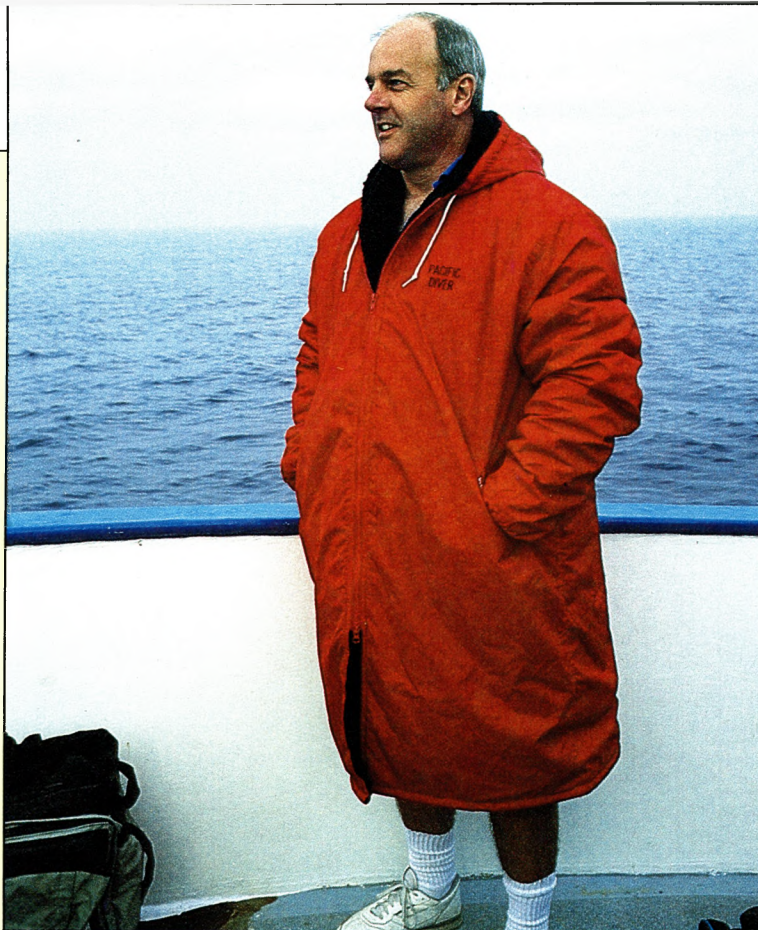
After a day of boat diving, when the cold waters of winter have sucked the heat right out of your body, there's nothing better than climbing out of a warm shower and into a toasty parka for the ride back to the mainland.

TruWest Inc., a veteran sportswear manufacturer just entering the diving industry, has introduced a parka designed for use before, in between or after diving. The heavy-duty parka is 100 percent waterproof and cut to knee-length so you can sit down on wet afterdeck benches or on top of deck houses without having to worry about the dampness seeping into your topside clothes.

The parka shell is manufactured out of 70 denier neoprene-coated nylon. Inside there's a 19-ounce plush pile lining that reaches all the way up into the ample drawstring hood. The two-way zipper is noncorrosive, and there are triple-stitched reinforced seams throughout. Overall, it's a pretty beefy jacket that wraps itself around you like a walking sleeping bag.

Returning from Catalina late one night on a recent boat trip with a rainstorm nipping at our stern wake, the only diver outside enjoying the brisk wind and salt air was the guy wearing a bright red parka. Out there grinning on a rolling afterdeck, he seemed as unaffected by the cold as a

*One hundred percent waterproof and machine-washable to boot.*



STEVE ESSIG

polar bear relaxing on an ice flow.

TruWest's parka is machine washable — a convenient feature — and comes in 12 different styles, 16 outside shell colors and 10 inside pile lining colors. Available in sizes XXS through XXXXL-Long, the

parka ranges in price from \$85 to \$110, depending upon the size.

For more information, contact TruWest Inc., 5152 Bolsa, #101, Huntington Beach, CA 92649; (800) 451-8401 in CA, or (800) 322-3669 national. ★★ ★★

### St. Claire's Gage-Gard

Why is it that generally the most expensive diving equipment — namely, gauges and decompression computers — are most susceptible to abuse? A gauge console hanging from a tank on a dive boat will get kicked and stepped on and smashed under falling weightbelts. Even when you're in the water consoles tend to get swung into rocks or reefs, and wrist-mount computers often get their faces scratched when their owners errantly jam them into lobster holes.

What expensive gauges need is protection from the rock 'em-sock 'em world of

diving. And St. Claire must agree, because the company makes the Gage-Gard, a non-magnetic stainless steel guard designed to protect the faces of gauges and decompression computers from damage. Simply slip the Gage-Gard over the face of a computer or into a gauge console boot and it goes to work warding off blows from boot heels and rocks to renegade dive gear.

Retailing for under \$20, the Gage-Gard comes in a variety of sizes to fit all major manufacturers' gauges and computers. For more information, contact St. Claire, 544 Marin Ave., Mill Valley, CA 94941; (415) 383-4826. ★★ ★ ½

### I.S.T.'s Dual-Window Mask

This is a solid traditional dual-window mask whose outstanding feature is its extra-wide skirt which offers a lot of latitude in the types of faces on which it can get a seal. Because the lip area is wider and the side skirts are longer, the mask seems to be more forgiving of both narrow and wide faces as well as facial hair (this assessment from someone who wears a full beard and, because of that, often has trouble finding masks that will not leak).

The strap clips are simple and effective. There are no springs or fancy latches for locking the strap into place. Basically, you pull on the strap to tighten it, but the strap won't loosen unless you manually trigger the clip. This system makes one-handed adjustments easy both topside and underwater.

The mask comes in clear silicone and provides plastic insert rings in blue, yellow, pink, green and clear so you can color-match the mask with your other gear. Optical lenses are also available.

In spite of the fact that I.S.T. products have been around for awhile, these diving masks are relatively hard to find. But when

*Offers protection from the hard knocks of diving.*



STEVE ESSIG



# ADVERTISING INDEX

| ADVERTISER                       | PAGE NUMBER |
|----------------------------------|-------------|
| ABC Photo                        | 8           |
| Aggressor Fleet                  | 10          |
| American Institute of Technology | 50          |
| Beuchat                          | 64          |
| Black Bart's Aquatics            | 54          |
| C & R Enterprises                | 25          |
| Camera Tech                      | 10          |
| Catalina Diving Resorts          | 55          |
| Cetacea                          | 11          |
| Creative Ad Club                 | 26          |
| Dive Alert                       | 8           |
| Divers Alert Network             | 53          |
| The Dive Boat 'Peace'            | 17          |
| Golden Doubloon Charters         | 42          |
| Horizon                          | 50          |
| Jim Church Undersea Photography  | 6           |
| Kettenhofen                      | 61          |
| King Kamehameha Divers           | 9           |
| Kona Aggressor                   | 63          |
| Lahaina Divers                   | 25          |
| Marina Del Rey Divers            | 42          |
| National Scuba                   | 27          |
| Pacific Camera Service           | 54          |
| Pacific Sporting Goods           | 54          |
| Pelican Products                 | 24          |
| Porta Marine                     | 18          |
| Princeton Tectonics              | 11          |
| R.C. Divers                      | 55          |
| Santa Barbara City College       | 55          |
| Screen Gems                      | 54          |
| Scuda                            | 6           |
| Sherwood West                    | 2           |
| Silent World                     | 42          |
| Small Hope Bay Lodge             | 26          |
| Stan's Skin Diving Shop          | 27          |
| Tabata USA, Inc.                 | 5           |
| Tropical Adventures              | 48          |

## STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION (Required by 39 U.S.C. 3685)

1A. Title of Publication: PACIFIC DIVER 2. Date of Filing: 9/19/90 3. Frequency of Issue: 6x (bi-monthly) 3A. No. of Issues Published Annually: 6 3B. Annual Subscription Price: \$14.95 4. Complete Mailing Address of Known Office of Publication: 3197-E Airport Loop Drive, Costa Mesa, CA 92626 5. Complete Mailing Address of the Headquarters of General Business Offices of the Publisher: 3197-E Airport Loop Drive, Costa Mesa, CA 92626 6. Full Names and Complete Mailing Address of Publisher, Editor, and Managing Editor: Publisher: Robert Twilegar, 881 Calle Vallarta, San Clemente, CA 92672; Editor: John Brumm, P.O. Box 6218, Huntington Beach, CA 92615 7. Owner: Western Outdoors Publications, 3197-E Airport Loop Dr., Costa Mesa, CA 92626; Burt Twilegar, President, 1206 Vista Cantora, San Clemente, CA 92672; Robert Twilegar, Vice President/General Mgr., 881 Calle Vallarta, San Clemente, CA 92672; Mrs. Laurel Robinson, 730 N. Greenfield, Apt. D, Hanford, CA 93230 8. Known Bondholders, Mortgagees, and Other Security Holders Owning or Holding 1 Percent or More of Total Amount of Bonds, Mortgages or Other Securities: N/A 10. Extent and Nature of Circulation: A. Total No. Copies (Net Press Run): Average No. Copies Each Issue During Preceding 12 Months: 20,391; Actual No. Copies of Single Issue Published Nearest to Filing Date: 21,772 B. Paid and/or Requested Circulation 1. Sales through dealers and carriers, street vendors and counter sales. Average No. Copies Each Issue During Preceding 12 Months: 6,763; Actual No. Copies of Single Issue Published Nearest to Filing Date: 5,527 2. Mail Subscription (Paid and/or requested): Average No. Copies Each Issue During Preceding 12 Months: 8,260; Actual No. Copies of Single Issue Published Nearest to Filing Date: 11,372 C. Total Paid and/or Requested Circulation (Sum of 10B1 and 10B2) Average No. Copies Each Issue During Preceding 12 Months: 15,023; Actual No. Copies of Single Issue Published Nearest to Filing Date: 16,899 D. Free Distribution by Mail, Carrier or Other Means Samples, Complimentary, and Other Free Copies: Average No. Copies Each Issue During Preceding 12 Months: 1,183; Actual No. Copies of Single Issue Published Nearest to Filing Date: 540 E. Total Distribution (Sum of C and D): Average No. Copies Each Issue During Preceding 12 Months: 16,206; Actual No. Copies of Single Issue Published Nearest to Filing Date: 17,439 F. Copies Not Distributed 1. Office use, left over, unaccounted, spoiled after printing. Average No. of Copies Each Issue During Preceding 12 Months: 997; Actual No. Copies of Single Issue Published Nearest to Filing Date: 501 2. Return from News Agents: Average No. Copies Each Issue During Preceding 12 Months: 3,188; Actual No. Copies of Single Issue Published Nearest to Filing Date: 3,832 G. TOTAL (Sum of E, F1 and 2 — should equal net press run shown in A): Average No. Copies Each Issue During Preceding 12 Months: 20,391; Actual No. Copies of Single Issue Published Nearest to Filing Date: 21,772 11. I certify that the statements made by me above are correct and complete.

Robert Twilegar, Publisher

## PRODUCT REVIEWS

you do finally find one, you'll probably be pleasantly surprised at the price. The mask retails for about \$39.

For more information, contact Sports

*The strap lock system allows for one-handed adjustments.*



STEVE ESSIG

Kingdom, which is the U.S. distributor for I.S.T. diving products, at 15705 Arrow Hwy., Suite 7-A, Irwindale, CA 91706; (800) 522-8688. They in turn will be able to direct you to a dealer in your area that carries I.S.T. diving products. ★★ ★

## Brotherz Gear Hangers

You're back from a dive trip, just rinsed out your gear in the bathtub and now you're ready to hang it up to drip dry. But drape a dripping BC on a standard plastic hanger and the weight will snap that hanger like a dried twig. Or try putting it on a heavy rounded business suit-type hanger and the BC will slide off the ends.

Before giving up and throwing your shopping gear into the corner of your closet, check out Brotherz Products' new dive gear hangers. Brotherz makes four distinct

hook at the base of the Wet Bootz and Wet Glovz models helps you organize the equipment in a storage system that will save closet space.

Brotherz hangers come in five different colors and sell for about \$4 apiece. A three-hanger set is also available that includes Wet Suitz, Wet Vestz and Wet Bootz hangers for about \$13.

For more information, contact Brotherz Products, 9616 E. Valley Blvd., Rosemead, CA 91770; (818) 442-7768. ★★ ★



*Great for drying and storing equipment.*

STEVE ESSIG

hangers: the Wet Vestz for hanging up buoyancy compensators; the Wet Suitz for wetsuits; the Wet Bootz, which accommodates a variety of gear including fins, booties and masks; and the Wet Glovz, which, of course, is for gloves.

Constructed of heavy-duty plastic to take the weight of wet equipment, not only will these hangers resist corrosion and reduce seam stress (there are no sharp edges to be found anywhere), but a small

## Pacific Diver's Product Review Rating System

- ★★★★★ Outstanding product. Real state-of-the-art perfection!
- ★★★★ A great product, making diving more fun, and a lot easier.
- ★★★ A good product. Solid and functional.
- ★★ A real disappointment
- ★ Forget about it.



## SOB

(Continued from page 50)

sun was shining. I pulled up to the boarding ladder, the inflatable full of water, what gear that was left strewn around the bottom of the boat. I sighed, looked at my dive partner. Boy, that was some fun.

Later, Ralph and I, being mature guys, talked it over and decided that it was the sun and the sea and the waves and nature that had conspired to keep us from going diving that day. But that "It's not our fault" line of reasoning lasted only until the first beer later that afternoon.

We had blown it out there, that was all

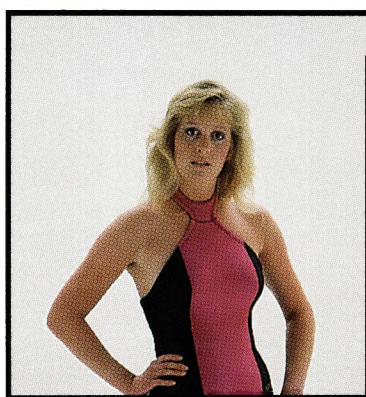
there was to it. We had gone out without being prepared. We hadn't forgotten the rules of diving, we had just ignored them, the way a bunny slope skier throws caution to the wind and heads down the widow-maker run, and then realizes halfway down that a terrible mistake has been made.

We felt like a couple of foolish rookie divers, because in spite of our years of experience, we had let our enthusiasm and impatience to "Get down!" cloud our good sense. It just goes to show you that anyone can blow it. Even experienced and incredibly good-looking divers like us. I guess there's no substitute for thinking, no

matter who you are, or how much diving time you have under your belt.

Anyway, Ralph and I have learned our lesson, and now we're looking forward to our next Channel Islands dive. On a charter boat. With a friendly, helpful crew to make things easy. I'll be there, you can bet on it. Just as soon as I've saved up enough money to buy a new mask. I think I'm going to get one of those new silicone jobs. And maybe a purple snorkel. □

*John Francis is PACIFIC DIVER's S.O.B. contributing editor, who will be spending his time commenting about the local diving scene until he can sneak back to the Sea of Cortez.*



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***Anarrhichthys ocellatus***  
 Phylum: Chordata  
 Class: Osteichthyes  
 Order: Perciformes  
 Suborder: Blennioidei  
 Family: Anarrhichadidae

*Article and photo by  
 David Wrobel*

Wolf eels rank right up there among the most hideous looking monsters of the sea. Although referred to as "eels," these homely beasts are only distant relatives of true eels and in fact have a closer affinity to blennies.

Wolf eels can be quickly distinguished from morays and other true eels by their pectoral fins. Beginning at massive heads, their elongated bodies reach lengths in excess of six feet, which taper to pointed caudal fins. The distinctive front canine teeth of wolf eels serve them well when dining on their favored diet of hard-shelled crabs, urchins, mollusks and other difficult to eat invertebrates. Rear sets of molars and powerful jaws easily enable wolf eels to crush and grind their crunchy prey. These same strong jaws and teeth can also inflict serious injury to careless divers who provoke or attempt to capture these usually docile beasts.

Wolf eels are bottom dwellers inhabiting the subtidal areas to depths of 1,000 feet from the Aleutian Islands to Southern California. Large crevices or dens are favored by most animals. Many divers poking into crevices in kelp forests have been startled when they suddenly find

themselves face-to-face with one of these creatures peering out of its hole. Although they spend most of their time sitting on the substratum, wolf eels occasionally enter the water column for brief forays using snake-like undulations to propel themselves.

Spawning takes place during the winter. Eggs are laid in protected rocky areas or in crevices. Both parents zealously guard the eggs until they hatch, at which time the larvae are cast into the dangerous world of plankton. Those fortunate enough to survive develop into attractive orange-striped juveniles. But alas, gradually the forces of ugliness take over and the wolf eel assumes its fearsome appearance. Females tend to be grayish-brown while the larger males are a lighter gray. As befits the species' name, a series of round dark spots with pale rings mottle the entire body.

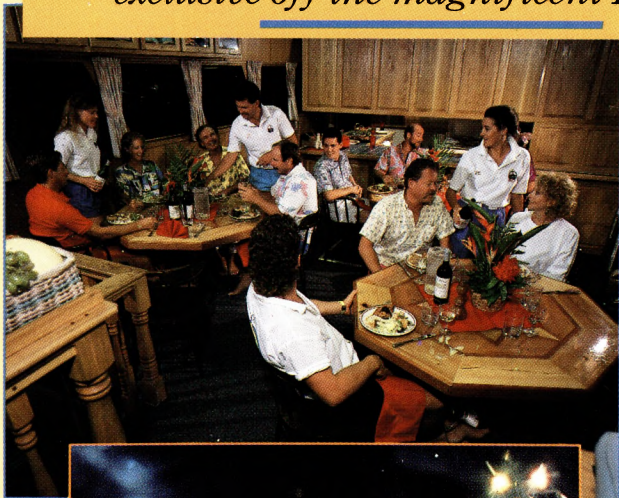
Wolf eels, like sharks, are somewhat misunderstood sea creatures. Despite their nasty appearance, these gentle and fascinating fish are harmless if they're left alone to live their sluggish lives. □

*David Wrobel is an aquarist and biologist at the Monterey Bay Aquarium, with a special interest in life in kelp forests.*





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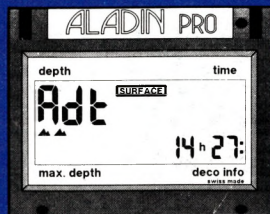
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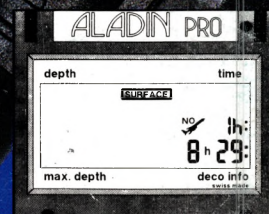


# THERE ARE LEADERS AND THERE ARE FOLLOWERS

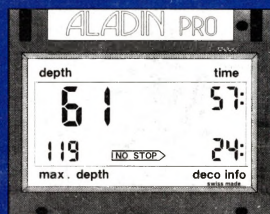
## ALADIN PRO by BEUCHAT



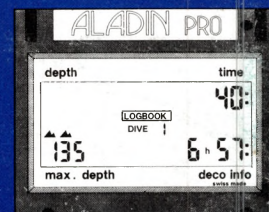
**SURFACE MODE** indicating altitude sector and adaptation time when diving at altitudes.



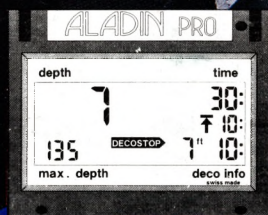
**SURFACE MODE** after 10 minutes of surfacing flight restriction and total time of desaturation are displayed.



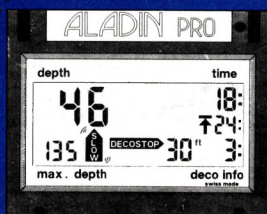
**DIVING MODE** below depths of 3 feet the Aladin Pro displays all pertinent information related to NoDecoSTOP current depth, max depth and dive time.



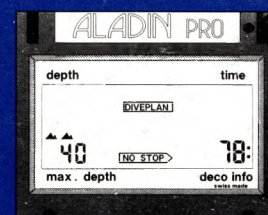
**LOGBOOK** the logbook will display a total of 9 dives to include, dive number max depth-dive time-surface interval-and altitude sector when diving at high altitudes. Ascent rate and deco stop alarms are also displayed if activated during dive.



**DECOMPRESSION STOP INDICATOR** after the No-Deco time limit has exceeded the DECOSTOP arrow appears indicating required decompression. Stop depth, time and total time of ascent are also displayed.



**ASCENT RATE ALARM** when the recommended rate of ascent of 33 feet/min is exceeded a black upward pointing arrow flashing SLOW appears followed by an ACOUSTIC beep warning of a too rapid ascent rate.



**DIVE PLAN** for repetitive dive planning the Aladin Pro will display Non-decompression time limits in 10 feet increments from 30 feet to 140 feet and current altitude sector if diving at altitude.



Available Hose-mount console colors.



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